The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 138, NO. 1 — CHICAGO, ILLINOIS — SEPTEMBER 4, 1948

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POSTGRADUATE EDUCATION IN OPHTHALMOLOGY IN THE UNITED STATES

Chairman's Address

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Until a quarter of a century ago it was considered that one could not be much of an ophthalmologist unless one had received at least part of one's education in Europe. This was the popular opinion despite the fact that some of our ablest men had never studied there or at most had spent but brief periods in the various clinics abroad. This belief had considerable basis in fact, for in the latter part of the eighteenth century and throughout the nineteenth the great teachers lived and taught in Europe. In England, Thomas Young, William Mackenzie and Sir William Bowman and on the Continent, Arlt, von Graefe, Helmholtz, Donders and others were opening a new science. Later such titans as Parsons, Priestly Smith, Ernst Fuchs, Axenfeld, LaGrange, Elschnig, Meller and their colleagues added to the sum of knowledge until ophthalmology came into its own as a specialty.

Meanwhile many Americans had gone to Europe to sit at the feet of the masters and had returned to open institutions devoted to the care and study of the eye—to disseminate the knowledge they had acquired and to add to it by scientific and clinical investigation. Near the middle of the nineteenth century Hermann Knapp arrived in New York. He had already attained fame as a teacher in Germany, and his influence as teacher and clinician was soon felt in this country. He contributed immensely to ophthalmology in the United States and left a son and a grandson to carry on the tradition.

The first concerted effort to give a course in the basic sciences related to ophthalmology was by the Graduate School of Medicine of the University of Pennsylvania in 1919, although the University of Colorado gave a very good three months' course which I had the pleasure of taking. This course in Philadelphia has been continued through the years, and it has aided immeasurably in the dissemination of knowledge of ophthalmology in the United States. From this pioneer movement in graduate training similar courses have sprung, until now eight universities are giving postgraduate instruction in these basic sciences.

From Baylor University College of Medicine, Houston, Texas.
Read before the Section on Ophthalmology at the Ninety-Seventh Annual Session of the American Medical Association, Chicago, June 23, 1948.

What is the situation today? I selected this subject for discussion because of the great number of young physicians who would like to enter ophthalmology but can find no place for adequate training. This condition has, of course, been aggravated by the number of veterans who have decided to specialize under the Veteran's Bill of Rights, but aside from this the increasing tendency to leave the field of general medicine would overdistend our training facilities.

It has been estimated that one ophthalmologist should be allotted to 15,000 persons. With the population of the United States at about 140,000,000, it would require about 9,333 ophthalmologists to care for the population. I have not been able to determine accurately how many physicians are practicing ophthalmology wholly or in part, but there are probably about 6,000. There are approximately 2,303 living persons who hold the certificate of the American Board of Ophthalmology and approximately 600 applications pending. Less than half of those practicing ophthalmology have been certificated, but the percentage of certified specialists is increasing each year as the older practitioners are taken out of the picture by death or retirement, and better facilities are furnished for training the younger ones.

If we insist that for one to be proved a competent ophthalmologist he must be certificated by the board—and there are those who disagree with this point of view—let us see what facilities we have for training these young persons, not only to pass the board examination but to produce ophthalmologists who can carry on and develop our specialty. In this discussion I will make no effort to distinguish between the terms graduate and postgraduate education. In recent years the term graduate education has come to mean the longer courses and residencies, while the term postgraduate alludes to the shorter or refresher courses.

Training in ophthalmology must come from one or more of the four following sources: (1) courses in the basic sciences related to ophthalmology, (2) residencies in ophthalmology in a general or special hospital, (3) work in outpatient departments of clinics and (4) association in practice with an experienced ophthalmologist. Probably the best trained men have enjoyed all of these privileges, but like other blessings they come to only the chosen few; most of us have had to get our training where and how we could. This is not the best way, as anyone will admit who has had to dig it out for himself. Therefore, if there is anything that can be done to extend our facilities for graduate and postgraduate training, we should set about it.

According to the information I have been able to obtain, courses in basic sciences related to ophthalmol-

ogy, not limited to residents, are given at the following institutions. The number of admissions in each is listed.

Washington University	12
Harvard Medical School	30
University of Illinois	30
New York University College of Medicine	24
Northwestern University	12
Pennsylvania University Graduate School	28
Tulane University	12
Wayne University	20
Ophthalmological Study Council	100

There are, of course, many institutions which give the basic courses to their own residents, and some cooperate with neighboring eye hospitals in that respect. Unfortunately, there are still a very few large eye hospitals where the training is still unorganized and desultory and the residents pick up what information they can get.

According to the Directory Department of the American Medical Association, in September 1947 physicians practicing ophthalmology alone were 1,885, and those practicing ophthalmology and otolaryngology together were 4,070, a ratio of about 1 to 2. It seems certain that in the future this ratio will change, so that within a few years more men will be practicing ophthalmology and fewer otolaryngology. Otolaryngologists say that since the advent of sulfonamide drugs and antibiotics it is difficult to find enough operative work to train men properly. I have even heard otolaryngology referred to as a dying specialty. However, if the otolaryngologists associated with me are a fair example, the specialty is a very lusty corpse. A statistician of the American Medical Association figured that a city of less than 25,000 could not support a physician who practiced ophthalmology alone. That could depend on the number and quality of optometrists in the same city. The fact is that most of the men in the smaller cities practice ophthalmology and otolaryngology, do good work and keep rather busy. Most young men who start to specialize take their training with the idea of being certificated. With the demands made by the Boards of Ophthalmology and Otolaryngology becoming more stringent, few men will spend the necessary time to prepare themselves in both specialties, so that probably the eye, ear, nose and throat specialist is on his way out. This will work a hardship on the smaller communities in the years ahead. I see no workable solution for this except a clinic containing a member of each specialty.

In 1947 there were 630 residencies in opththalmology and otolaryngology approved by the Council on Medical Education and Hospitals of the American Medical Association. Two hundred and forty-one of these are in ophthalmology, 326 in otolaryngology and 73 in both specialties. This does not mean, of course, that 241 ophthalmologists will finish their training each year, for most of the residencies are for at least two years, and some are four years in length. It is safe to say that less than a hundred well trained ophthalmologists are produced each year under our present system. This is not because there is a dearth of candidates, for the applications for basic courses and for residencies exceed the number of places by at least 5 to 1. Several young men who have sought training in ophthalmology have told me that it required not only high grades in medical school, a pleasing personality and a fine record of service, but also a friend with great influence at court to secure such a place. My experience in trying to help a few men have convinced me that this is true.

The situation that confronts us then is that we need more ophthalmologists, we have the material to make them from, but we do not have the places to train them. What can we do about it? That depends largely on whether the profession is willing to go to work on the problem. It is folly to suppose that there are only eight medical schools in the United States capable of having instruction courses not limited to their own residents. Could these courses not be extended to take in others? I am sure that they could. Many general hospitals and small eye hospitals that have not the facilities for basic training would take such men as residents and give them clinical experience. Hospitals that have not had residents in ophthalmology might be induced to find a place for men who had such basic training.

I must pause here a moment to pay tribute to the Ophthalmological Study Council. This was the brain child of three men: Dr. Walter B. Lancaster, Dr. S. Judd Beach and Dr. Theodore L. Terry. These men saw the great need for basic instruction and did something about it. In 1945 they gave this course in Boston to 80 candidates. Because of housing shortage and adverse weather conditions, it was given at St. Petersburg, Fla., in 1946. Seventy-eight students completed this course. Unfortunately, Dr. Terry died before the second course started. Last year the course was given to 112 students in Portland, Maine, and it will be repeated there this year with a limit of a hundred students. The sacrifice of time, energy and money that the men who run this course have freely made has not been generally appreciated—nor have the results of their work. The students who take this course have an examination each week, and their men are so well grounded when they finish that most of them do very well on the basic science part of the board examination. I must mention that while the three men who originated the Ophthalmologic Study Council were members of the American Board of Ophthalmology, the Board did not officially sponsor the council and, aside from the cooperation of individual members who were asked to help in teaching, had nothing whatever to do with conducting it. This statement is made so that no one will assume that because of taking this course, or any other, he is thereby rendered eligible to take the board examination. Every applicant must pass the Committee on Requirements—this rule has been in effect since the board's inception.

In an address before the American Academy of Ophthalmology and Otolaryngology last October, the president, Dr. Alan C. Woods,[1] centered his remarks on the American Board of Ophthalmology. As chairman of the board, I want to take this opportunity to reply. On the whole, Dr. Woods was very kind in his evaluation of the board's work. Two points of criticism which he leveled at the board are certainly debatable. The first was that the requirement of a year's rotating internship was unnecessary and disadvantageous, in that it drew bright young men away from ophthalmology into other specialties that made no such demand. We still have more bright young men that we can train, and I believe that if a

1. Woods, A. C.: Address of President: The Present Policies of the American Board of Ophthalmology and the National Societies in Relation to the Progress of Ophthalmology, Tr. Am. Acad. Ophth. 52:1-5 (Sept.-Oct.) 1947.

candidate is so little interested in ophthalmology that he could not spend a year learning some general medicine, he would not make a very good ophthalmologist. In the first year of eye residency at Johns Hopkins Hospital, the resident is given a certain amount of general medicine, but in most institutions he is not. Personally I believe a man would make a better clinical ophthalmologist if he had three to five years of general medicine, but under present conditions it is impractical to require this. Another criticism was that certain societies require the certificate for admission and that some hospitals and medical schools require it for appointment or promotion to the staff. This is true and to a large extent is desirable. If one admits that the American Board of Ophthalmology has been a potent factor in raising educational standards, then one must agree that there must be some strong incentive for one earnestly to desire the certificate. The certificate has no legal significance, so that it must have a professional one. Certainly, few persons would go to the trouble to prepare themselves for an examination and endure what appears to be a rather nerve-wracking experience to most of the candidates in order to have a piece of paper to hang on the wall that did not mean a great deal. In order to make the certificate worth while and thus raise the standards of postgraduate training, it seemed necessary for the board to request certain organizations to require the certificate as one requisite to admission. While our board was first in the field by many years, it had nothing to do with the formation of the Advisory Board for Medical Specialties. This Advisory Board was sponsored by the Committee on Hospitals and Medical Education of the American Medical Association. While the Board of Ophthalmology is a member of the Advisory Board and sends two members to take part in the discussion at the meetings and while the Ophthalmology Board attempts to cooperate with the other boards, it nevertheless maintains its independence of thought and action, and is not responsible for the action of any other member of the Advisory Board.

Some of the criticisms of the boards alluded to by Dr. Woods as originating with Dr. Chesney do not apply to the American Board of Ophthalmology. We do not require a three year, a two year or even a one year residency in ophthalmology as a prerequisite to examination. We do not require a basic science course. Each applicant's training and experience is evaluated individually, and if the majority of the Committee on Requirements feels that the candidate is qualified he is given the preliminary test. When the Council on Hospitals and Medical Education of the American Medical Association demanded through the Advisory Board that all boards should require three years of institutional training, the American Board of Ophthalmology said that it did not take that training to start a person in the study of ophthalmology and that we had too few institutions in which to train our men. As a consequence, we, with two other boards, were not approved for a certain period. Later it became evident that it was undesirable for all boards to have the same requirements, so that we were reinstated. The American Board of Ophthalmology has been in existence long enough so that everyone who has entered the practice of ophthalmology within the past thirty-two years has known that if he wished to be certificated he had to make certain preparations for it. Unfortunately, a large number of persons paid no attention during the early years of the board's existence, but now, since the certificate has become increasingly valuable, they want it and are not prepared to take the examination. As for many years certificates have been issued only to those who pass the examination, there are many disappointments. There has been considerable antiboard sentiment created within the profession in recent years by the action of the younger boards in making the requirements so stringent that men established in certain specialties could not meet them without heavier sacrifices than they were willing to make. The fact that certain so-called minor specialties, such as the proctology and the allergy, have not been permitted to form their own boards has led to bitterness. It is evident that hospitals and medical schools should not make certification a requisite to appointment or promotion in a specialty that has not had a board long enough for the staff to have had opportunity to prepare for certification. Time and good judgment on the part of hospital and medical school administrators will solve this problem.

There is one phase of postgraduate training in ophthalmology of which we should be thoroughly ashamed —the training of Negro physicians. That might be said of the education of Negroes in medicine, for there are only two medical colleges devoted to the education of Negroes out of seventy class A schools in the United States, and there are few Negro graduates from the other sixty-eight schools. Considering that 10 per cent of the population is Negro, this is a sorry showing. Only about ten Negro physicians have been certificated by the American Board of Ophthalmology. There are very few places where Negroes are accepted as residents. If the plan for cooperation in medical education proposed at a recent conference of governors from the Southern states matures, there should be a great medical school for Negroes opened, with facilities for postgraduate training.

Having spoken of the situation that exists and having pointed out the fundamental needs in postgraduate medical education in ophthalmology, I must sorrowfully admit that I have no solution to offer. It seems to me, however, that the difficulties are not insuperable. It is impossible that only eight out of seventy of our medical schools are so situated that basic training courses can be given. It is unlikely that cities the size of New York, Philadelphia and Boston, with from two to four medical schools each, could provide a staff for only one course. There are many special and general hospitals in the country that could take on more residents if they were urged. There must be some organization vitally interested in postgraduate education that will persistently try to influence institutions to improve and increase their training facilities. I know of no better group to undertake this task than the American Board of Ophthalmology. While the board has always been interested in this, it has never had a committee that devoted itself wholeheartedly and continuously to this duty. Such a committee has recently been appointed. I believe that within a few years as a result of such a committee's efforts and with the cooperation of the teaching institutions a radical change for the better will occur in postgraduate teaching in ophthalmology.

PREVENTION OF POSTOPERATIVE PULMONARY INFECTIONS

Inhalation of Micropowdered Penicillin and Streptomycin

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The prevention of pulmonary complications following major abdominal or thoracic surgical intervention is still a matter of deep concern, especially in the northeastern sections of the United States where chronic sinusitis and chronic basilar pulmonary infection are rather common. Pulmonary complications are of two general groups, those associated with pulmonary emboli and those associated with bacterial infection with or without atelectasis. Only the second type is to be considered in this report. The use of chemotherapeutic agents, particularly penicillin and, more recently, streptomycin, has been valuable in reducing the incidence of these complications, but the methods of administration, dosage and ideal duration of treatment are still a matter for some debate.[1] In the series of patients to be presented, stress has been placed on an accurate knowledge of the preoperative bacterial flora of the upper part of the respiratory tract and an attempt has been made to reduce the flora preoperatively by inhalation of appropriate chemotherapeutic agents. In the treatment of acute and chronic bronchopulmonary infections, it has been demonstrated [2] that organisms sensitive to penicillin or streptomycin may be diminished or greatly reduced in the respiratory tract by inhalation of aerosols of the appropriate antibiotic. The use of penicillin and streptomycin in the micronized form for inhalation, as described by Taplin and Bryan,[3] appears to offer definite advantages over other methods of administration. Figures 1 and 2 show the apparatuses used in this study, which simplify the intrapulmonary administration of penicillin and streptomycin. This study is submitted as a preliminary report. It presents a method for reducing the incidence of postoperative pulmonary infections by inhalation of micronized penicillin or streptomycin.

The pathogenesis of postoperative pulmonary infection is somewhat different from that of the usual lobar pneumonia in that the offending bacteria are usually those seen in the normal flora of the mouth and upper part of the respiratory tract. The incidence of pneumococcic bronchopneumonia corresponds roughly with the incidence of the pneumococcic carrier state in the general population.[4] Postoperative pneumonia is also frequently due to bacteria which are considered nonpathogenic in the throat but which became pathogenic in the lung when the normal mechanism of clearing the tracheobronchial tree of secretions is disturbed following administration of an anesthetic. It is probable that most cases of postoperative pneumonia begin in this manner from small areas of atelectasis, and prophylactic measures used to prevent the accumulation of bronchial secretions have materially reduced the incidence of this complication. Postanesthetic tracheal suction or bronchoscopic aspiration, hyperventilation, changing the patient's position and encouraging him to cough, early ambulation and other postoperative measures are all methods which tend to prevent the accumulation of secretions and increase the pulmonary ventilation. In addition to these methods, it seems logical to attempt to reduce the existing bacterial flora of the upper part of the respiratory tract by chemotherapy before the operation.

Fig. 1.—Insufflator type apparatus used for inhalation of micropowdered penicillin or streptomycin.

Merck & Co., Inc., made a grant-in-aid regarding streptomycin studies and gave supplies of streptomycin preparations.

Parke Davis & Company supplied powdered diphenhydramine hydrochloride ("benadryl hydrochloride") used in these experiments.

Lederle Laboratories, subsidiary of the American Cyanamid Corporation, made grants-in-aid and gave laboratory supplies and penicillin.

With the technical assistance of Carol MacGregor, Juanita Warner, Jack Pressburg, M.D., Louis Jensen, Carl Hornberger and Edward Roche.

Work was performed in the Departments of Medicine and Surgery, University of Rochester School of Medicine and Dentistry, and Dentistry and Clinics of Strong Memorial Hospital and Rochester Municipal Hospital.

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1. Olsen, A. M., and Clagett, O. T.: Nebulized Penicillin: Preliminary Report of Its Role in the Management of Surgical Bronchiectasis, Proc. Staff Meet., Mayo Clin. **20:** 184-193, 1945. Olsen, A. M.: Nebulization Therapy in Bronchiectasis, J. A. M. A. **134:** 947-953 (July 12) 1947. White, W. L.; Burnett, W. E.; Bailey, C. P.; Rosemond, G. P.; Norris, C. W.; Favorite, G. O.; Spaulding, E. H.; Bondi, A., Jr., and Fowler, R. H.: Use of Penicillin in Prevention of Postoperative Empyema Following Lung Resection, ibid. **126:** 1016-1024 (Dec. 16) 1944. Romansky, M. J.; Dugan, O. J., and Rittman, G. E.: Penicillin in Iodized Oils for Instillation into the Lungs, Science **102:** 255-256, 1945. Lyons, C.: Chemotherapy in the Management of Wounds, J. A. M. A. **132:** 215-217 (Jan. 25) 1947. Fauley, G. B.; Dragstedt, L.; Stormont, R. T., and Pfeiffer, C. C.: The Use of Penicillin in the Treatment of Peritonitis, J. A. M. A. **126:** 1132-1134 (Dec. 30) 1944. Wellgast, G. F.: Penicillin Therapy in Abdominal Surgery, Surg., Gynec. & Obst. **81:** 599-607, 1945. Griffin, W. D.; Silverstein, J.; Hardt, H. G., Jr., and Seed L.: Prophylactic Chemotherapy in Appendicitis, J. A. M. A. **133:** 907-909 (March 29) 1947. Imes, P. R.: Chemotherapy in Traumatic Surgery of the Abdomen, Ann. Surg. **123:** 44-47, 1946. Allen, A. W.: Medical Progress: Abdominal Surgery, New England J. Med. **236:** 173-179 (Jan. 30) 1947. Wilson, C. E.; Hammond, C. W.; Bryne, A. F., and Bliss, E. A. The Control of Experimental Pneumonia with Penicillin. Comparison of Inhalation and Injection Therapy, Bull. Johns Hopkins Hosp. **77:** 411-421, 1945.

2. (a) Olsen and Clagett.[1] (b) Segal, M. S.; Levinson, L., and Miller, D.: Penicillin Inhalation Therapy in Respiratory Infections, J. A. M. A. **131:** 762-777 (June 28) 1947. (c) Bryson, V.; Sansome, E., and Laskin, S.: Aerosolization of Penicillin Solution, Science **100:** 33-35, 1944. (d) Barach, A. L.; Oppenheimer, E. T., and Forman, J.: Inhalation of Penicillin in Bronchopulmonary Infection, News Letter, Army Air Force Rheumatic Fever Control Program, 1945, vol. 2, pp. 10-21. (e) Barach, A. L.; Silverstein, F. H.; Oppenheimer, E. T.; Hunter, T., and Soroka, M.: Inhalation of Penicillin Aerosol in Patients with Bronchial Asthma, Chronic Bronchitis, Bronchiectasis and Lung Abscess: Preliminary Report, Ann. Int. Med. **22:** 485-509, 1945. (f) Echman, M.; Rumsey, C. C., Jr.; Barach, B. and Barach, A. L.: Demand Apparatus for Automatic Delivery of Aerosols During Inspiration, J. Lab. & Clin. Med. **30:** 608-610, 1945. (g) Mutch, N., and Rewell, R. E.: Penicillin by Inhalation, Lancet **1:** 650-652, 1945. (h) Knott, F. A., and Clark, W. H.: Absorption of Aerosol Penicillin via the Lungs, ibid. **1:** 468-469, 1945. (i) Finke, W.: The Use of Penicillin Aerosol in Respiratory Infections, Bull. M. Soc. County of Monroe, New York **2:** 386-393, 1946. (j) Segal, M. S., and Ryder, C. M.: Progress in Penicillin Inhalation Therapy, New England J. Med. **236:** 132-138, 1947. (k) Fullerton, C. W., and Shane, S. J.: The Treatment of Acute and Chronic Pulmonary Disease with Penicillin Aerosol, Canad. M. A. J. **54:** 535-539, 1946. (l) Durant, J. M.; Sokalchuk, A. J.; Morris, C. M., and Brown, C. L.: Streptomycin Therapy in Hemophilus Influenzae Pulmonary Infections, J. A. M. A. **131:** 194-196 (May 18) 1946. (m) Harris, H. W.; Murray, R.; Paine, T. F., and Finland, M.: Streptomycin Therapy of Pulmonary Infections, New England J. Med. **236:** 612-622, 1947. (n) Paine, T. F.; Murray, R., and Finland, M.: Streptomycin: II. Clinical Uses, New England J. Med. **236:** 748-760, 1947.

3. Taplin, G. V., and Bryan, F. A., Administration of Micronized Therapeutic Agents by Inhalation or Topical Application, Science **105:** 502-503, 1947.

4. White, B.: Biology of the Pneumococcus, New York, The Commonwealth Fund, 1938, pp. 230-237.

(Footnote 2 continued in next column)

METHOD AND MATERIALS

The method of study included preoperative cultures of sputum, or of the nasopharynx if sputum was not available, and the bacteria were identified by the usual laboratory methods. Tests of sensitivity to penicillin and streptomycin were performed in order to estimate the probable value of the treatment and as a guide to proper dosage. The test used was admittedly a qualitative one based on the principle described by Fleming[5]: "Penicillin diffuses through agar and inhibits the growth of an organism to a distance proportional to the sensitivity of that organism." In other words, an organism which shows a wide zone of inhibition of growth is relatively sensitive, whereas an organism which shows a small zone of inhibition is relatively resistant. There are many factors in this test which can be further modified and thereby produce a more accurate result; however, for clinical purposes, this simple test has proved satisfactory. As a control group, 195 preoperative cultures were studied in this manner, and the results are tabulated in table 1. It is evident that nearly all the bacteria encountered in this group were sensitive to penicillin and/or streptomycin. A group of 96 patients was not treated by any inhalation therapy, and of the 18.7 per cent presenting postoperative pulmonary infections (table 5) more than 75 per cent had the same bacteria predominating in both preoperative and postoperative cultures.

Fig. 2.—Suction type disposal apparatus used for inhalation of micropowdered penicillin or streptomycin.

Forty patients were studied who received penicillin by atomizer (34 patients) or mist type aerosol (6 patients) for two days before and after operation (table 2). This group showed a definite reduction in the number of penicillin-sensitive bacteria present following treatment, but there was not the postoperative response that had been expected. We had believed that penicillin given by ordinary throat spray atomizer would be sufficient to eliminate penicillin-sensitive organisms. These results indicate the need for greater intrapulmonary penetration by the antibiotic. For example, in patients who showed Streptococcus viridans preoperatively, 97 per cent of the organisms were sensitive to penicillin but one-half the patients still had positive cultures postoperatively. A similar series of 51 cases is recorded in table 3, but the patients were treated with micropulverized penicillin mixtures rather than the atomized or usual aerosol method. In this series, the Strep. viridans were observed to be 100 per cent sensitive preoperatively and only 1 positive culture was observed postoperatively after treatment. The number of cultures positive for Staphylococcus aureus hemolyticus was reduced about equally with the atomizer aerosol and with the micronized antibiotic. It is noteworthy that there was an increased number of cultures positive for Escherichia coli after this treatment, but there were no postoperative pulmonary infections which were considered a result of this organism.

TABLE 1.—*Micro-Organisms Cultured from Nasopharynx and Sputum Prior to Treatment (195 Cases)*

Organisms	Penicillin Sensitivity		Streptomycin Sensitivity	
	Number of Cases	Number Sensitive, Percentage	Number of Cases	Number Sensitive, Percentage
Streptococci				
Strep. viridans	183	92	103	99
Strep. hemolyticus	10	90	10	90
Strep. anhemolyticus	49	83	14	84
N. catarrhalis	96	31	47	100
E. coli	16	0	16	100
H. influenzae hemolyticus	30	53	18	100
H. influenzae	31	32	22	100
Staphylococci				
S. aureus hemolyticus	33	85	20	100
S. albus	55	83	15	96
Pneumococci	7	100	2	100
Friedländer's bacillus	3	0	3	100
M. tetragenus	6	100	2	100
Yeast	16	21	16	10
Diphtheroids	20	70	3	100
B. pyocyaneus	1	0	1	100

TABLE 2.—*Analysis of the Respiration Flora Before and After Penicillin Prophylaxis (by Atomizer, 34 Cases; by Aerosol, 6 Cases)

Bacteria	Preoperative		Organism Present During Postoperative Period, Number of Cases
	Number of Cases	Number Sensitive, Percentage	
Streptococci			
Strep. viridans	38	97	19
Strep. hemolyticus	3	100	0
N. catarrhalis	8	0	14
E. coli	1	0	10
Staph. albus	9	100	3
Staph. aureus hemolyticus	12	91	1
H. influenzae hemolyticus	4	100	4
H. influenzae	5	20	2
Yeast	2	0	5
B. proteus	0	..	3
Friedländer's bacillus	2	0	1
Pneumococcic	2	100	0

* Patients received 100,000 units per day (25,000 units for four doses) for two days prior to operation and for two days after operation.

Streptomycin was also used in 40 cases, preoperatively and postoperatively, and the bacteriologic data are recorded in table 4. The streptomycin was administered in the micronized form and according to the dosage schedule outlined (table 4). As in the previous series, Strep. viridans was the predominant organism and before treatment was 100 per cent sensitive to streptomycin. Neisseria catarrhalis was the second commonest organism seen on culture, and this responded to treat-

5. Fleming, A.: On the Antibacterial Action of Cultures of Penicillin, with Special Reference to Their Use in the Isolation of B. Influenzae, Brit. J. Exper. Path. 10: 226-236, 1929.

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ment in a higher percentage of cases than Strep. viridans, although total numbers are too small to be of significance. It is interesting that in 10 of the 40 patients (25 per cent), the postoperative sputum and/or nasopharyngeal cultures were sterile following the streptomycin therapy.[6]

The results of the prophylactic preoperative and postoperative use of penicillin and streptomycin by inhalation are summarized in table 5. During the period of time in which this study was in progress, it was impossible to obtain a series in which alternate patients were used as controls, but an attempt has been made to compare the series of treated patients with similar series of untreated patients. Fifty consecutive cases in which major abdominal and thoracic operation was done were analyzed, covering a period of February and March 1946. Many of the patients in this series of 50 and in the control series of 96 studied in 1946-1947 received penicillin intramuscularly postoperatively, but none received it by inhalation. All of the control patients were treated with the commonly accepted methods designed to prevent postoperative complications as outlined previously. The postoperative pulmonary complications were divided into three types—bronchitis, bronchopneumonia and definite atelectasis, with or without pneumonia. The patients were followed up closely, and with any suspicion of pulmonary complication repeated roentgenograms were taken.

The gross percentage of pulmonary complications in the periods studied in 1946 and 1947 was 18.0 and 18.7 per cent, respectively, when no inhalation antibiotic therapy was given. The 40 patients receiving penicillin by the atomizer or aerosol method had a 20 per cent incidence of complications, but those receiving the micropulverized form of penicillin had only a 2 per cent incidence. This difference in results may be due in part to poorer pulmonary penetration of the atomized penicillin. However, in 1 of the 6 patients receiving penicillin aerosol postoperative bronchopneumonia developed, and the sputum showed Strep. viridans and Staphylococcus albus. In 3 other aerosol-treated patients postoperative pulmonary infections developed due to penicillin-resistant organisms. Failure in these cases cannot be considered failure due to the aerosol. Forty patients received micronized streptomycin, and there were no postoperative pulmonary complications. Because the micronized form of the drugs was used in the spring and summer months, a similar series of untreated patients was analyzed from the summer of 1946, and the incidence of complications was 20 per cent. It should be strongly emphasized that the percentage incidence of postoperative complications does not reflect the severity of the complications. Many complications were mild and did not prolong the postoperative convalescence appreciably, while others were a definite postoperative setback or catastrophe. The true situation cannot be analyzed until more extensive morbidity and mortality data are available. It is obvious that postoperative pulmonary complications in larger series will not be reduced to zero by using micronized streptomycin as they were in this small series of only 40 patients.

The apparent value of the treatment is illustrated by the case reported herein.

TABLE 3.—*Analysis of the Respiratory Flora Before and After Micronized Penicillin Prophylaxis (51 Cases)**

Organisms	Preoperative: Number of Cases	Preoperative: Number Sensitive, Percentage	Organism Present During Postoperative Period, Number of Cases
Streptococci			
Strep. viridans	45	100	1
Strep. hemolyticus	4	100	0
N. catarrhalis	8	15	13
E. coli	6	0	10
S. albus	5	80	3
H. influenzae hemolyticus	3	67	1
H. influenzae	0	..	5
S. aureus hemolyticus	11	90	4
Yeast	1	0	9
Aerobacter aerogenes	0	..	3
B. proteus	1	0	2
M. tetragenus	2	100	0

* Prophylaxis consisted of one to two days of therapy before and after operation, with an average of 300,000 units per day.

TABLE 4.—*Analysis of Respiratory Flora Before and After Micronized Streptomycin Prophylaxis (40 Cases)**

Organisms	Streptomycin Sensitivity Preoperatively: Number of Cases	Streptomycin Sensitivity Preoperatively: Number Sensitive, Percentage	Streptomycin Sensitivity Postoperatively † : Number of Cases	Streptomycin Sensitivity Postoperatively † : Number Sensitive, Percentage
Streptococci				
Strep. viridans	31	100	10	30
Strep. hemolyticus	1	100	0	..
Strep. anhemolyticus	5	100	0	..
N. catarrhalis	9	100	1	100
E. coli	5	100	6	67
Staphylococci				
S. albus	1	100	2	50
S. aureus hemolyticus	4	100	3	33
Yeast	0	..	6	17
H. influenzae hemolyticus	4	100	1	0
H. influenzae	2	100	2	50
B. pyocyaneus	1	0	1	0
Diphtheroids	0	..	1	0
B. proteus	1	100	0	..
M. tetragenous	2	100	0	..

* Patients received 500,000 units (0.5 Gm.) preoperatively, (300,000 units the evening before and 200,000 units the morning of operation). Postoperatively the patients received 200,000 units per day for two days.
† No growth in 10 out of 40 cases (25 per cent) in postoperative culture

REPORT OF A CASE

E. W., an 80 year old white widower, was admitted to Strong Memorial Hospital on Nov. 11, 1946, with a six months' history of fulness in the epigastrium and regurgitation after eating solid foods, which had become progressively severer. At the time of admission, he was capable of retaining liquids only and had sustained decided loss in weight.

Physical Examination.—The patient was a fairly well developed somewhat emaciated 80 year old white man who appeared chronicly ill and coughed frequently. The trachea was deviated to the left. The chest was emphysematous, with coarse rails audible over the main portion of the bronchial tree. The heart sounds were faint and regular. There were moderate epigastric tenderness and spasm on the right side, but no masses were palpable. The results of the remainder of the examination were not remarkable.

Laboratory Examination.—The Wassermann reaction was negative. The red blood cell count was 4,670,000, hemoglobin 17 Gm. per hundred cubic centimeters and white blood cells 8,000, with a normal differential count. The urine was normal. The reaction of the stool to guaiac was negative. Tuberculin precipitation was 5.6 Gm. per hundred cubic centimeters; the albumin-globulin ratio was 3.1 to 2.5. Nonprotein nitrogen was 38 mg. per hundred cubic centimeters and alkaline phosphatase 2.3 Bodansky units. Roentgenographic studies and esophagoscopy established the diagnosis of carcinoma of the distal third of the esophagus.

At the time of admission the patient's general physical condition would not permit surgical removal of the esophageal lesion, because of purulent bronchitis, weakness and poor nutrition. His sputum culture contained (1) Friedländer's bacillus (penicillin resistant), (2) nonhemolytic Hemophilus influenzae (penicillin resistant), (3) pneumococci (penicillin sensitive), (4) hemolytic streptococci (penicillin sensitive) and (5) Strep.

6. Durant, Sokalchuk, Morris and Brown.[31] Harris Murray, Paine and Finland.[32] Paine, Murray and Finland.[33]

viridans (penicillin sensitive). Treatment with aerosol penicillin, 25,000 units six times daily, was started on November 18. After several days of aerosol penicillin therapy, the sputum was decidedly decreased in volume and penicillin-sensitive organisms were absent, but Friendländer's bacilli remained. A transthoracic esophageal resection and esophagogastrostomy were performed on December 5 by one of us (E. B. M.).

On the first postoperative day, the patient was alert and conscious but was seen to be more dyspneic. There were moist rales heard over both lung fields, and bronchoscopy was performed, with removal of a large formed plug of mucus from the right main bronchus, which was cultured. Treatment with aerosol penicillin was started again. Streptomycin was not available. Bronchoscopy was repeated on the second postoperative day, with removal of another mucous plug. Cultures of the aspirated material showed Friedländer's bacillus only on both occasions. Coarse moist rales were heard throughout both lung fields. Roentgenograms showed early bilateral bronchopneumonia and atelectasis on the left side. Streptomycin therapy was started, 0.25 Gm. every six hours intramuscularly and 100 mg. six times daily in 1 cc. isotonic sodium chloride solution by aerosol. On the third postoperative day his lungs were fairly clear and vital signs showed definite improvement. A sputum culture on the fourth day, after two days of streptomycin aerosol therapy, contained no organisms and the lungs were clear. The patient continued to improve rapidly and was discharged on the fifteenth postoperative day.

Comment.—We feel that if this patient had received both penicillin and streptomycin preoperatively his bronchial tree could have been sterilized and his postoperative pneumonia prevented. When this patient was studied preoperatively, streptomycin was not available in the hospital for prophylactic use. This case demonstrates the clinical value of thorough preoperative and postoperative bacterial study of the sputum.

COMMENT

The results obtained indicate that more emphasis should be placed on the importance of the normal flora of the respiratory tract in the causation of postoperative pulmonary infections. The majority of bacteria commonly seen in the upper part of the respiratory tract are sensitive to penicillin and/or streptomycin, and with preoperative prophylactic chemotherapy their numbers may be reduced or completely eliminated. Chemotherapy should also be continued for several days after operation, until the patient is again able to clear the tracheobronchial tree of secretions, or longer if a specific indication exists. The prophylactic treatment appears to be of specific value if preoperative cultures show bacteria, such as Strep. viridans, which may be pathogenic. It is particularly important if preoperative cultures show definite pathogens, such as Streptococcus hemolyticus, pneumococci and Friedländer's bacilli. The vast majority of cases of postoperative pneumonia are due to bacteria present in the respiratory tract preoperatively. The chemotherapy should obviously be supplemented with all the other prophylactic measures which help to maintain an adequate airway and which clear the bronchi of secretions. The value of postoperative tracheal aspiration with a catheter or with the bronchoscope as a means of preventing or treating atelectasis cannot be overemphasized.

This report indicates a rather high incidence of postoperative complications in the control groups, but the data is influenced by certain factors. Rochester is in an area where an unusually large percentage of the population has chronic sinusitis, and, particularly in the winter and spring, acute infections of the upper part of the respiratory tract are common. The operations included in this series are procedures performed in the upper part of the abdomen and chest, which carry a higher incidence of pulmonary complications than lower abdominal procedures or operations outside body cavities. The patients listed as having bronchitis were not seriously ill from this complication, but were included in the series if they had fever associated with cough and sputum but no pulmonary consolidation. Patients with this type of illness will survive without specific treatment, but they are made extremely uncomfortable by the cough, convalescence may be prolonged and the incidence of abdominal wound disruption is increased. The patients with bronchopneumonia and/or atelectasis were all seriously ill, and in these two groups specific treatment seemed most effective.

It is not the purpose of this report to compare the relative merits of administering penicillin by inhalation in the micronized form with administration by other methods, but the micronized form seems to have some advantage in surgical patients with pulmonary complications. Specimens of the peripheral portion of the lungs have been removed during thoracotomy when the patient has received penicillin prophylactically by this method. Appreciable amounts of penicillin are present, and there is no microscopic evidence that the contact of the penicillin has caused damage to the pulmonary parenchyma. Similar experiments with micronized streptomycin show that it also reaches the periphery of the lungs, although there may be no appreciable amounts present in the blood stream as determined by present methods of assay. These observations indicate that penicilin and/or streptomycin enters the entire bronchial tree, so that the drug is immediately available at the site of infection as well as absorbed in the blood stream in the case of penicilin. Penicillin and streptomycin are also absorbed by the

TABLE 5.—*Incidence of Postoperative Pulmonary Complications*

Number of Cases	Dates	Preoperative Penicillin * or Streptomycin,† Inhalation	Postoperative Penicillin or Streptomycin, Inhalation	Postoperative Pulmonary Complications				
				Bronchitis	Broncho-pneumonia	Atelectasis Without Pneumonia	Total Number of Cases	Percentage of Complications
50	February and March 1946	None	None	2	4	3	9	18
50	June and July 1946.....	None	None	1	7	2	10	20
56	November 1946 to April 1947	None	None	3	11	3	18	18.7
40	April and May 1947.....	Atomizer or aerosol penicillin	Atomizer or aerosol penicillin	0	8	0	8	20
51	May and June 1947.....	Micronized penicillin	Micronized penicillin	1	0	0	1	2
40	July 1947	Micronized streptomycin	Micronized streptomycin	0	0	0	0	0

* Penicillin—25,000 units four times per day for two days before and after operation.
† Streptomycin—100,000 units three times per day for two days before and after operation.

lymphatic vessels of the lung, since in experiments with dogs therapeutic concentrations were obtained in thoracic chyle, after intratracheal insufflation.

The reaction of the patients to the administration of the micronized form has been in general favorable. The patients are usually grateful that they do not have the repeated needle punctures required by intramuscular or subcutaneous injection. There have been no severe reactions to either penicillin or streptomycin administered by this method, but there have been some untoward effects, most of them minor, and some minor disadvantages to the method. A complete discussion of these features will be published, but it is worth while recording them here in brief.

Analysis of 320 cases in which micropulverized penicillin-dextrose-1 per cent diphenhydramine hydrochloride mixtures, with a mean particle size of 1 micron, were administered by inhalation was made to determine the incidence of local and general allergic reactions. Three patients experienced general urticaria; 1 patient had mild asthma; 1 experienced exacerbation of his epidermophytosis, and 5 per cent noted local allergic sore throat reactions, consisting of redness, swelling and, occasionally, vesicle formation in the mouth, pharynx and tongue. These local reactions subsided in two to five days after discontinuance of treatment, and improvement was speeded by administration of antihistaminics by mouth. Several patients objected to the bitter taste of the penicillin mixtures. Some were troubled with coughing and choking sensations when they first tried the mixture. Nearly all patients were able to learn how to inhale the powdered preparation and avoid coughing after the first dose or two.

The ingredients of the vehicles in the mixtures have now been altered, so that few patients object to the taste of the preparation. Most patients are able to self administer a dose in a period of two to five minutes, using the suction type apparatus, thereby saving considerable nursing time.

It is the opinion of various observers that patients prefer this method of administration to injections or the mist type aerosol apparatus. The method is painless, and the prescribed dose may be self administered with less effort and more rapidly than with the usual mist type aerosol apparatus even when oxygen or some other automatic source of pressure is used.

It is possible that the vehicle dextrose, used in these preparations, acts as an expectorant, since it is hypertonic when it first goes into solution with the bronchial secretions. Several patients who have had chronic bronchitis prior to operation have noted rapid relief of cough, ease of expectoration and reduction in the amount of sputum raised.

This method of prophylactic treatment should be beneficial, particularly in emergency cases in which at the time of operation there is a concurrent acute infection of the respiratory tract. Fifteen patients with postoperative bronchopneumonia have been treated successfully by inhalation of the appropriate antibiotic in the micronized state.

SUMMARY AND CONCLUSIONS

Postoperative pulmonary infections following major abdominal and thoracic procedures occur in 18 to 20 per cent of cases.

Most postoperative pulmonary infections are caused by organisms present in the respiratory tract prior to operation.

Nearly all organisms infecting the respiratory tract are sensitive to either penicillin or streptomycin.

The common pathogens or potential pathogens of the respiratory tract may be temporarily removed or greatly reduced in number before and during the operative and postoperative period by inhalation of relatively small doses of micronized penicillin or streptomycin mixtures. This method of prophylactic treatment has reduced the incidence of postoperative pulmonary complications.

Prophylactic intrapulmonary administration of micronized penicillin and streptomycin mixtures should be especially beneficial in major abdominal emergency conditions with acute concurrent infections of the respiratory tract.

Penicillin and streptomycin assay of peripheral pulmonary tissue obtained from patients undergoing thoracotomy demonstrates penetration of both agents to the terminal bronchial tree.

PREVENTION OF TUBERCULOSIS AMONG STUDENTS OF MEDICINE

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After the establishment of the chest clinic at the University of Minnesota Students' Health Service in 1920, an excessive number of patients came from the Schools of Nursing and Medicine. Examinations were then made only of students who requested them.[1] The incidence of primary tuberculosis (tuberculous infection) among students was not known, but it was assumed to be in excess of 90 per cent. In 1928 the tuberculin test was administered to those entering all departments of the university; only about one third reacted.[2] Subsequently a much higher incidence of clinical tuberculosis was observed among students and recent graduates in medicine throughout the world than in the general populations of the same areas.

SURVEY OF PHYSICIANS GRADUATED FROM UNIVERSITY

In 1941 we reported the results of a survey of the 1,441 physicians graduated at the University of Minnesota from 1919 to 1932, in which a response was obtained from 1,304 (97.4 per cent).[3] Among these graduates there were 7.1 per cent who contracted clinical tuberculosis while in school or after graduation. Among those dead from all causes, 26.2 per cent died from tuberculosis. The question arose as to whether this was a higher incidence than among students and graduates in other professional schools. In 1943 we reported on a similar survey of the students and graduates in our School of Law; only 1.3 per cent were found to have contracted the disease while in school or after graduation.[4]

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Because of lack of space this article has been abbreviated in THE JOURNAL by omission of the table. The complete paper will be found in the authors' reprints, which the authors will be pleased to send on request.

1. Myers, J. A., and Shepard, W. P.: Tuberculosis and Other Respiratory Infections Among University Students, Minnesota Med. **8**: 237, 1925.

2. Lees, H. D., and Myers, J. A.: Tuberculous Infection Among Adults, Am. Rev. Tuberc. **21**: 532, 1930.

3. Myers, J. A.; Diehl, H. S.; Boynton, R. E.; Ch'iu, P. T. Y.; Streukens, T. L., and Trach, B.: Tuberculosis Among Students and Graduates of Medicine, Ann. Int. Med. **14**: 1575, 1941.

4. Myers, J. A.; Diehl, H. S.; Boynton, R. E., and Streukens, T. L.: Tuberculosis Among Students and Graduates of Law and Medicine, Yale J. Biol. & Med. **15**: 439, 1943.

TESTING OF ENTERING STUDENTS

In 1928 the tuberculin test was administered to entering students, and in 1929 the test, plus roentgen inspection of the chests of the reactors with a complete examination of those with shadows to determine the causes of lesions, became routine procedure. Nonreactors to tuberculin on entrance were retested with tuberculin annually as long as they did not react. Those who became reactors while in school, as well as those who were reactors on entrance, have had annual roentgen inspections of their chests, with complete examination when indicated.

By the tuberculin test we were able to diagnose primary tuberculosis (tuberculous infection) among entering students. Within eight weeks (rarely earlier than three or more than seven weeks) after human tissues are invaded with tubercle bacilli allergy can be detected by the tuberculin test. A characteristic reaction to tuberculin indicates the presence of primary tuberculous lesions. Therefore we were able to diagnose this disease promptly among any nonreactors on entrance who became infected while in school. Whenever a student contracted primary tuberculosis as indicated by the tuberculin reaction, we studied his contacts and in most cases located the origin of his infection. This enabled us to determine in which hospitals and even in which departments of hospitals the majority of students were infected. The tuberculin test also served as the only accurate criterion of the effectiveness of the tuberculosis control measures.

Among the students entering over a four year period beginning in 1929, with 449 graduating, 35.6 per cent reacted to tuberculin on admission. The percentage of reactors increased to 41 at the end of the third year and to 67.8 at the end of the senior year. Indeed, 50.2 per cent of the nonreactors on entrance reacted on graduation. It was alarming that the incidence of those who became reactors while in school increased in each class. For example, among those who graduated in 1933 and 1936, 57.7 and 77.9 per cent, respectively, reacted on graduation.[5]

Before studies were made on these four classes, our recognition of the problem was based on morbidity and mortality.[5] Therefore the extreme seriousness of the situation was not perceived until we realized that approximately as many students contracted primary tuberculosis (tuberculous infection) during the brief time they were in medical school as had acquired this disease between birth and matriculation. Our studies have revealed that far more students became infected on tuberculosis services than in general hospitals.[6]

PROGRAM AT UNIVERSITY HOSPITAL

In 1936, a case-finding program was instituted among the personnel and the patients of the University Hospital. This provided for initial and subsequent periodic examinations of all employees, regardless of capacity, and for adequate examination for clinical pulmonary tuberculosis in the patients as soon as possible after they entered the institution, regardless of the cause for admission.[7] The first examination of the members of the personnel revealed 3 with contagious disease, and among the patients several cases were found coexisting with other diseases for which they were admitted. Both the employees and the patients in whom contagious tuberculosis was revealed were immediately isolated and treated with strict contagious disease technic so as to protect all of their contacts, including the medical students. In 1938 an identical tuberculosis control program among personnel and patients was instituted at the Minneapolis General Hospital, where many of our students work. Thus, in these two hospitals the likelihood of students becoming infected or reinfected with tubercle bacilli became slight.

ATTITUDE OF STUDENTS

After the routine periodic tuberculin testing program was established, the students themselves manifested considerable concern on seeing in their classes approximately twice as many reactors at the end of the senior year as on admission to the school. In the meantime they had observed several of their classmates who had contracted clinical lesions, and some had become seriously ill. Since all such persons were from the group

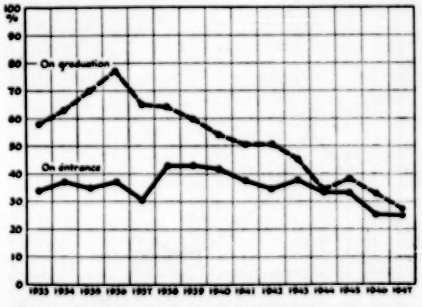

Chart 1.—Percentage of tuberculin reactors among medical students on entrance and on graduation.

of tuberculin reactors, the students came to regard such a reaction as an ill omen. Those who did not react to tuberculin were extremely desirous of avoiding the first infection, while those who reacted on admission to the school were equally desirous of preventing reinfections. They saw a significant number of their classmates become reactors to tuberculin soon after returning from residence in a sanatorium. Thus they felt that adequate protection was not afforded them, and therefore many began to object to such a service. Prior to 1936 the sanatorium service had been compulsory, but that year any student who expressed a desire to omit it was permitted to substitute other work in tuberculosis. In 1937 a large percentage of the students made such a substitution, and in the summer of that year residence in the sanatorium was discontinued. Thus a considerable number of the students who graduated in 1937, the majority in 1938 and all in 1939 and thereafter did not have sanatorium service. An arrangement was made for teaching medical students tuberculosis in a general hospital with a chest disease service operated on a strict contagious disease basis.

In discussions concerning tuberculosis control among students of nursing and medicine the phrase, "unavoidable exposure" has been introduced. While some

5. Myers, J. A.; Diehl, H. S.; Boynton, R. E., and Trach, B.: Development of Tuberculosis in Adult Life, Arch. Int. Med. **59**:1 (Jan.) 1937. Myers, J. A.; Trach, B.; Diehl, H. S., and Boynton, R. E.: Tuberculosis in Medical and Nursing Hospital Personnel, Ann. Int. Med. **11**:2181, 1938.

6. Myers, J. A.; Boynton, R. E.; Diehl, H. S.; Streukens, T. L., and Ch'in, P. T. Y.: Tuberculosis Among Students and Graduates in Nursing, Ann. Int. Med. **14**:873, 1940.

7. Diehl, H. S., and Myers, J. A.: Tuberculosis in College Students, Tr. Nat. Tuberc. A. **32**:163, 1936; Tuberculosis Prevention, Immunization and Periodic Health Examinations Among Medical Students, J. A. Am. M. Colleges **15**:104, 1940.

exposures are unavoided, we do not believe that they are unavoidable, and therefore the phrase should be abandoned. The diagnosis of contagious tuberculosis has been so simplified and can be made with such promptness that there remains no excuse for the so-called unsuspected case to expose students in either the inpatient or the outpatient departments of our hospitals. Moreover, a satisfactory contagious disease technic has been developed which provides an excellent barrier between students and known cases of tuberculosis in our hospitals and sanatoriums.* The phrase "unavoidable exposure" suggests a fatalistic point of view or a spirit of defeatism. It seemed almost justified in the early years of our work when the problem was so serious, but today we do not know of a single student who became infected while in school from unavoidable exposure.

RESULTS OF CONTROL PROGRAM

The serious efforts to protect our students which began in 1936 promptly proved effective, as indicated by the decrease in tuberculin reactors on graduation during succeeding years from 77.9 per cent in 1936 to 50.4 per cent in 1941 and 37.4 per cent in 1945 (the table and chart 1).

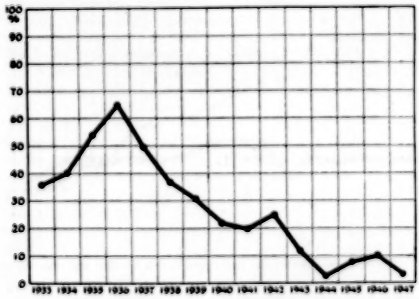

Chart 2.—Percentage of nonreactors to tuberculin among medical students who became reactors during their medical course.

In the table and chart 2 we have presented the percentage of nonreactors to tuberculin on entrance who became reactors during their medical course. In 1936 over 65 per cent of the nonreactors on entrance became reactors while in school. However, when our control program was put into effect there was a rapid decrease of this percentage, reaching 20 in 1941, 7.8 per cent in 1945 and 3.2 per cent in 1947.

The reduction in incidence of primary tuberculosis (tuberculous infection) among our medical students has been accompanied by a decrease in the number of lesions which became large enough to be located by physical examination of the chest, including roentgenographic inspection. This is true among both those who had primary tuberculosis on entrance and those who contracted it while in school. Since fewer students became primarily infected it is probable that a smaller number of reinfections occurred. This leads us to wonder whether exogenous reinfections are not more significant in causing clinical tuberculosis than we had formerly believed.

8. Myers, J. A.: Are Nurses and Physicians Protected Against Tuberculosis? Trained Nurses & Hosp. Rev. **91**: 416, 1933. West, C.; Schaller, L., and Myers, J. A.: There Is No Excuse for Tuberculous Infection, Mod. Hosp. **59**: 75, 1942.

We regard a characteristic tuberculin reaction (an area of edema or induration of 5 mm. or more in diameter) as diagnostic of the primary type of tuberculosis. In practically all tuberculin reactors dying from any cause primary lesions can be found if postmortem examinations are done in sufficient detail. However, there is a wide discrepancy between the tuberculin reaction and ability to locate lesions in the living human body by all other phases of the examination, including roentgen inspection of the chest. Only those lesions within the 75 per cent of the lungs visualized on the usual roentgenogram that are large enough and of sufficient density to absorb roentgen rays cast visible shadows. In every person who contracts tuberculosis the disease can be diagnosed by the tuberculin reaction within eight weeks after the bacilli invade the tissues. However, at this time roentgen inspection of the chest rarely reveals any evidence of the disease in more than 5 to 10 per cent of the cases. Later deposition of calcium in primary foci and regional lymph nodes may cast shadows in lesions previously invisible to roentgen rays. Even with this addition it is rarely possible to locate primary lesions of more than 15 to 20 per cent of the persons in whom they exist. Thus the tuberculin reaction constitutes the only method of diagnosing strictly early tuberculosis. At the moment a person becomes a reactor to tuberculin he has tuberculosis just as certainly as the one ill or dead from meningitis or chronic pulmonary disease. The difference is only one of degree. If we had not administered the tuberculin test to our entering medical students but had used all other phases of the examination, we would have obtained an extremely fragmentary picture of the tuberculosis situation among them. If we had not periodically administered tuberculin to those who entered as nonreactors but had used all other phases of the examination, we would now know of few who contracted primary tuberculosis (tuberculous infection) while in school. Thus our work on discovering and controlling the sources of infection and watching for the earliest appearance of reinfection type of lesions among the infected students would have been extremely limited.

There has been considerable controversy with reference to the differences in prevalence of the reinfection type of tuberculosis which develops among students who enter school as reactors to tuberculin and those who become reactors as students. One group contends that those who enter as reactors are immunized, whereas those who become reactors have no immunity and clinical disease is much more prevalent and severe among them. Apparently this controversy hinges on the differences in diagnostic criteria and classification of lesions. Sight is often lost of the fact that every student who becomes a reactor while in school has contracted primary tuberculosis. However, only those in whom demonstrable lesions are found are said to have the disease. Since these students are adults, any roentgen shadow which reveals lesions in their chests has been thought to represent significant reinfection type of tuberculosis. In reality, many of them depict nothing more than primary lesions which are not of clinical significance. Moreover, in some reports persons with nothing more than enlargement of hilus shadows or erythema nodosum have been included in the group said to have contracted clinical tuberculosis.

Sight is also often lost of the fact that students who enter school as reactors have usually already undergone what those who become reactors after entering experience while in school. Primary infiltrates, etc.,

have disappeared or been replaced in part by depositions of calcium. Lesions which subsequently appeared among these students are of the reinfection type. Such conditions as fresh primary infiltrates could not be expected to appear among them, and therefore this group presents a smaller number with roentgen shadows.

Much of the controversy, therefore, has resulted from comparing unlike conditions. In 1941 we reported 160 medical students who entered school as tuberculin reactors, and 3.1 per cent contracted reinfection type of lesions while in school or soon after graduation; whereas among 145 who became reactors while in school, in 9.6 per cent demonstrable lesions developed.[8] This statement might be misinterpreted to mean that more than three times as many students who became reactors while in school contracted tuberculosis as among those who entered as reactors. Actually, this is not true. In fact, of the 9.6 per cent in whom demonstrable lesions were seen, primary complexes and pleurisy accounted for 6.2 per cent; whereas only 3.4 per cent contracted the chronic reinfection type of tuberculosis. Thus, only the 3.4 per cent is comparable with the 3.1 per cent among the students who entered as reactors in whom clinical lesions developed.[9] Throughout our studies we have been unable to find any significant difference in the development of the chronic reinfection type of tuberculosis among those entering as reactors and those who became reactors while in school.

In the earlier years of our work it was commonplace to diagnose and treat clinical tuberculosis among the medical students. The disease ranged from pleurisy with effusion to progressive pulmonary disease and extrathoracic lesions. Some of the students who were infected or reinfected ultimately died from tuberculosis. However, during the past four years only 1 student contracted a demonstrable lesion while in school. He had tuberculosis on admission to the medical school, as indicated by the tuberculin reaction. He had been sensitive to tuberculin since the age of 14 years. However, by no phase of the periodic examinations, including roentgenographic inspections of the chest, were we able to locate the lesions through March 1946. In December of that year immediately before his graduation a lesion in the upper lobe of the left lung had evolved to such size and density as to cast a definite roentgen shadow. No sputum was produced, but acid-fast bacilli were recovered from gastric washings. This case—the first in four years—created considerable excitement on the campus. The attitude of the faculty and the student body was in sharp contrast to that of a decade before when so many students contracted clinical disease that any new case was almost unnoticed except by those trying to solve the problem. Similar tuberculosis control measures have been applied in a school of nursing with almost identical results.[10]

Our tuberculosis control program has had an exceedingly worth while educational value among the students. Between the annual examinations many of the nonreactors test one another or request the test in the clinics where they work or even administer tuberculin to themselves. Through an oversight one of our classes graduated without tuberculin having been administered to the nonreactors in the health service in the senior year. A questionnaire revealed that nearly all of them had been tested elsewhere just before graduation. In the same class the senior year roentgen inspection of the chest was overlooked. However, all of the reactors had taken the matter in hand and arranged for roentgenograms of their chests. Tuberculosis has become a personal issue among the students. They strive to learn all diagnostic procedures and apply them to patients at every opportunity. On detection of tuberculous lesions they seek for their patients the best therapeutic procedures and arrange for control of contagion.

9. Myers, J. A.: Tuberculosis in Hospital Personnel, Dis. of Chest **12**: 354, 1946.
10. Boynton, R. E.; Diehl, H. S., and Myers, J. A.: Prevention of Tuberculosis Among Students of Nursing, Am. J. Nursing **47**: 661, 1947.

DIAGNOSIS OF PRECLINICAL CANCER OF THE CERVIX

Cervical Cone Knife: Its Use in Patients with a Positive Vaginal Smear

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Recent advances in methods of cancer detection by Papanicolaou's [1] vaginal smear and the subsequent development of the "surface-biopsy" [2] cell-scraping method offer a valuable method of uterine cancer control through early diagnosis. A danger exists, however, that the method might fall into disrepute if hysterectomy were widely practiced on the basis of a cytologic diagnosis alone. Especially could this become true if inexperienced and inadequately trained cytologists were to influence the surgeon's judgment unduly. It therefore seems indicated that every effort to confirm a positive cell diagnosis by biopsy be made before subjecting the patient to radical treatment.

The sensitive "surface biopsy" method, when applied routinely, is bringing to light more and more cases of preclinical cervical cancer. This poses a genuine problem for the surgeon or gynecologist in attempting to confirm the cell diagnosis by cervical biopsy. The work of Novak,[3] Schiller,[4] Pund and Auerbach [5] and others indicates fairly general agreement that the squamous margin of the squamocolumnar junction is the point of origin of the common squamous cervical cancer. Diagnosis by "surface biopsy" cell study adds further confirmation to this concept. Following a cytologic report of positive results with the "surface biopsy" method and in the absence of a focal lesion clinically, it becomes difficult to decide in which part of the squamocolumnar junction a minute lesion is developing. Frequently the first and the second biopsy may have negative results, and even serial sections may be required to confirm the cell diagnosis of cancer. A danger rests in the possibility that a negative result of biopsy, with no further investigation, may lead to fatal delay, permitting a beginning cancer to develop into a clinical and potentially incurable cancer before treatment is instituted. On the other hand, it is almost equally important to prevent needless major operation. It is, therefore, of importance that an efficient method of obtaining a true evaluation of growth in the cervix by adequate biopsies be found.

No problem exists in the confirmation by biopsy of the clinically evident carcinoma. Indeed, in the past this has been the stage when most patients with cervical cancers have reached the operating table, often too late

Presented in part before the New Orleans Obstetrical and Gynecological Society, New Orleans, April 15, 1948.
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1. Papanicolaou, G. N., and Traut, H. F.: Am. J. Obst. & Gynec. **42**: 193, 1941.
2. Ayre, J. E.: Am. J. Obst. & Gynec. **53**: 609, 1947.
3. Novak, E.: J. A. M. A. **109**: 1145, 1937.
4. Schiller, W.: Personal communication to the author.
5. Pund, E. R., and Auerbach, S. H.: J. A. M. A. **131**: 960, 1946.

for cure. The preclinical cancer presents a different problem. The sensitivity of the "surface biopsy" cell-scraping in cancer detection places in the surgeon's hands many early cancerous conditions in which the lesion is microscopic in size. In approaching the problem of confirmation by biopsy in such a case, the following factors must be borne in mind:

1. The squamous cancer develops at some point in the squamous margin immediately adjacent to the glandular cervical epithelium. The cancer is, therefore, on the most exposed part of the cervix, and trauma, even a light sponging of the cervix before biopsy, may wipe off enough of the tiny growth so that the pathologic evidence may be lost without the entire growth's being removed.

2. The usual unavoidable trauma, such as cervical dilatation, may macerate the cervix at the junctional region, causing loss of the friable neoplastic tissue, thus altering the course of treatment.

3. In the absence of a focal lesion, visually demonstrable, it may be impossible to decide which lip and, indeed, which segment to select for biopsy.

4. After the biopsy specimen is taken, special care of the sample should be taken to prevent the friable surface cells of the lesion from breaking away and being lost.

In order to give a true evaluation of tissue in this early stage, it is advisable to excise the entire squamocolumnar junction before it is subjected to trauma of any kind. In different cervices, depending largely on parity and the presence of erosions, the squamocolumnar circle may vary from a diameter of 0.5 cm. to 2 inches (5 cm.). The larger the eroded area, the larger the squamocolumnar circumference. Electroconization is a good method of prophylactic therapy and of obtaining a biopsy specimen, provided that the anatomic structure of the squamocolumnar junction is just right. However, the large percentage of cases in which there is an enlarged and irregular squamocolumnar margin render it unsuitable for biopsy purposes, because a portion of the squamous margin may be missed or because a portion of it may be destroyed by the heat, and the tissue interpretation may, therefore, be erroneous.

Fig. 1.—Ayre's surgical cone knife (Clay-Adams Company, Inc., 44 East Twenty-Third Street, N. Y.)

In an effort to evolve a nontraumatic surgical instrument to remove the entire squamocolumnar circle of tissue, the surgical cone knife (fig. 1) was developed. Proper application of this instrument permits the excision of the entire squamous margin of the junctional region without necessitating a cervical amputation or a hysterectomy. Multiple or serial sectioning of this ring of tissue enables a precise and accurate diagnosis of squamous cancer in the cervix.

INSTRUCTIONS FOR USE OF THE CONE KNIFE

The narrow blade of the cone knife possesses a dual cutting edge, which renders it highly adaptable to controlled excision of selected tissues. The cervix should be adequately exposed and held in position by anterior and posterior tenacula; then, preceding any surgical dilation or other trauma to the junctional region, the blade is inserted into the tissues ¼ inch (0.64 cm.) outside the squamous margin of the squamocolumnar junction, with the blade directed toward the cervical canal. Light pressure on the blade causes the point to penetrate the tissues, the point of the knife on reaching the center of the circle becomes visible in the cervical canal (fig. 2). The blade is then gently maneuvered through the entire circle, care being taken that the blade be guided around the cervix at a constant distance from the squamous margin, regardless of possible irregularity or asymmetry of its circumference. This permits excision of the entire squamous margin with a fairly superficial quantity of the subepithelial tissue and a small collar of the glandular endocervical epithelium. Following the removal of this collar of tissue, which gives the entire circle of the squamous margin for multiple biopsy, the tissue is laid out in a single strip, and in some cases it may be advisable to embed it in the paraffin before permitting any further tissue sectioning. After the circular biopsy specimen is obtained, the usual surgical management follows. Moderate bleeding may, and usually does, occur following the excision. An excellent method of both controlling the bleeding and providing additional prophylactic therapy is to follow the surgical conization by electroconization. This removes a second cone of tissue, seals off the lymphatic vessels and at the same time controls points of hemorrhage. On the other hand, a Sturmdorff amputation, or a cervical amputation of whichever type may be selected, may follow the careful excision and preservation of the biopsy material.

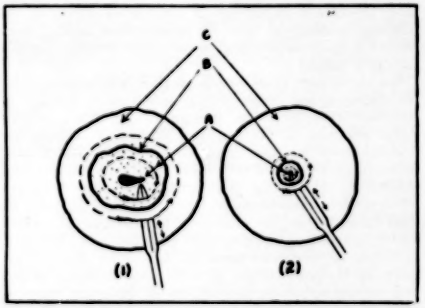

Fig. 2.—Diagrammatic representation of uterine cervix with cone knife in operation: (1) Eroded type, showing large squamocolumnar circumference (*B*). (2) Normal-appearing type, showing small squamocolumnar circumference near cervical os. *A*, endocervical glandular epithelium, *B*, margin of squamous epithelium (squamocolumnar junction) and *C*, squamous epithelium of cervix. The pointed blade with the dual razor-sharp edges is inserted into the cervix 0.5 cm. distal to the margin of the squamous epithelium, being directed toward the center of the cervical circumference. A circular "ring" of tissue is excised, removing the entire squamocolumnar junctional zone for biopsy. Preclinical squamous cervical cancer will be found, if present, in the clear nonstippled portion of the excised collar of tissue.

COMMENT

To avoid needless radical surgery and treatment and yet to insure adequate protection of the patient against cancer and to preserve the valuable function of cytologic study in cancer detection, the following steps are recommended as a logical sequence to a positive result of a cytologic test:

1. In the presence of a suspicious cervical lesion, a biopsy specimen should be taken from this area and a sample of endometrium obtained.

2. In the presence of a clinically obvious carcinoma of the cervix, a confirmatory biopsy may be made immediately preceding the application or insertion of radium.

3. In the presence of a cervical condition which appears benign, with no suspicious lesion, the procedure is more difficult. This is the type of condition being discovered with great frequency with the routine "surface biopsy" scraping method. The experienced cytologist is usually able to state whether the cancer cells are of the usual squamous type or of the less frequent glandular type. If the cells are of the squamous type, the surgical cone knife comes into play and the squamocolumnar circle is excised, giving a "ring biopsy." The second step is electroconization. A sample of endometrium is also obtained for biopsy purposes. If the cells prove to be of glandular type, a curettage of the endometrium and of the cervical canal for biopsy should be made.

4. In large erosions and lacerations, when the squamocolumnar circumference is large and irregular, a Sturmdorff amputation may be indicated initially or following excision of suspected parts of the squamous margin for biopsy.

5. In rare instances when the cytologic evidence is conclusive in the opinion of an experienced cytologist, while results of biopsies are repeatedly negative, a total hysterectomy may be considered if the patient is past her childbearing period.

6. In rare instances, in which results of cytologic study are positive and conclusive, while results of biopsies are negative, and the probability is entertained that a rare tubal or ovarian malignant condition may exist, laparotomy and a possible hysterectomy may be considered.

7. In cases in which fundal carcinoma is suspected on the basis of positively reacting cells of a glandular type, an endometrial biopsy specimen should be obtained for confirmation preceding surgical extirpation or radiation therapy. The treatment, therefore, still rests on the observations of biopsy with one possible exception. A problem is posed: How radical should one be in the treatment of preclinical carcinoma and preinvasive carcinoma of the cervix?

8. In preclinical carcinoma of the cervix, which has not yet reached clinical stage I, it is my contention that a good panhysterectomy may be adequate (except in the rare case in which the lesion has extended up into the canal and may have spread more than is apparent in a lateral direction. The disease in such a case is, of course, beyond the preclinical stage and is actually in stage I or II, demanding treatment accordingly).

9. In the preinvasive cervical cancer (intraepithelial carcinoma or carcinoma in situ), especially during the childbearing period, how radical or how conservative should one be? The cone knife permits serial sectioning to determine proof of actual preinvasiveness. Therefore, in such cases, it is my contention that a Sturmdorff amputation may prove adequate and a total hysterectomy may not be necessary. Such cases, obviously, should be followed up assiduously. The great sensitivity and accuracy of the "surface biopsy" method in following up these cases month by month and year by year should permit an early enough recognition of cells indicating recurrence to give a "second chance," permitting hysterectomy or radiation therapy before dangerous spread occurs.

SUMMARY

The vaginal smear and "surface biopsy" methods offer valuable means of uterine cancer control by early detection.

Indiscriminate hysterectomy on the basis of positive smears without biopsies may cause this important advance in diagnosis of cancer to fall into disrepute.

The cervical cone knife is presented as a practical instrument to permit precision biopsies of the squamocolumnar junction in preclinical cervical cancer, introducing the "ring biopsy."

For the patient with a positive vaginal smear a confirmatory biopsy preceding radical treatment is mandatory to safeguard the future reputation of this valuable advance in uterine cancer control. Various steps in diagnostic treatment are recommended for consideration.

TREATMENT OF STERILITY; INSEMINATION TIMED BY RAT OVULATION TEST

Report of Thirty-Two Cases

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In a previous communication,[1] we reported on ten conceptions following the use of the rat ovulation test [2] for the timing of intercourse or insemination.

The present paper also deals with the use of the same test. In this instance, it was employed in order to predict the day for the insemination of a series of 32 women. The observations throw light on the value of the method as an aid in the timing of insemination and also indicate the frequency with which certain infertile women may experience abnormal ovulation reactions.

MATERIALS AND METHODS

Couples who sought assistance, because the wife either had never conceived or, having done so, had failed to do so for a long time thereafter, form the basis for this report.

Each couple was studied primarily from three points of view: (1) sperm status of the husband, (2) patency of the wife's fallopian tubes and (3) character of the wife's ovulation process.

Sperm Status of Husband.—The investigation of each couple was begun by a study of the sperm status of the husband.[3]

After five days of sexual abstinence, he procured an ejaculate by masturbation. This was expelled into a sterile wide-mouthed bottle. The number of moving sperm cells in the entire ejaculate was determined. This was done by diluting seminal fluid 1:20 with Locke's solution in a pipet for white blood cell counting and examining it under the microscope on a field for red blood cell counting. The number of moving sperm cells per cubic centimeter of the ejaculate was computed. From this figure, it was possible to determine the number in the total ejaculate. The resulting figure was employed to designate the degree of fertility of the husband.[4]

From the Gynecean Hospital Institute of Gynecologic Research, University of Pennsylvania, and the Wistar Institute of Anatomy and Biology.

Aided by grants from the Committee on Research, Council on Pharmacy and Chemistry of the American Medical Association and the Samuel S. Fels Fund.

1. Murphy, D. P., and Farris, E. J.: Conception Following the Day of Ovulation with the Rat Test, Am. J. Obst. & Gynec. **54**: 467, 1947.

2. Farris, E. J.: A Test for Determining the Time of Ovulation and Conception in Women, Am. J. Obst. & Gynec. **52**: 14, 1946.

3. Farris, E. J.: An Improved Method for Semen Analysis, J. Urol. **58**: 85-88, 1947.

4. Farris, E. J.: The Number of Motile Spermatozoa as an Index of Fertility in Men: A Study of 406 Semen Specimens, to be published.

Patency of Fallopian Tubes.—The degree of patency of the wife's fallopian tubes was established either by tubal insufflation or by hysterosalpinography. The latter method is preferred and was used oftenest.

Ovulation Process.—The probable day of ovulation was detected by the rat test as developed by one of us (E. J. F.).[1] The ovulation reaction of each woman was studied for at least two months and in some cases over a period of many months. The first test was made as a control; during this month insemination was not attempted. It was performed, however, during the first month in which there was a normal or a reasonably satisfactory reaction.

Insemination Technic.—The number of moving sperm cells in the specimen employed for insemination was determined. This was done within an hour and the insemination within two hours of the ejaculation.

The wife was placed on the examining table in the lithotomy-Trendelenburg position. The cervical os was exposed with a bivalve speculum. The seminal fluid was drawn into a 2 cc. tuberculin syringe to which was attached a Bower's antrum cannula. The latter was inserted into the cervix with the expectation of just passing the internal os. In cases in which this was impossible, it was passed to the point where it met resistance. An attempt was made to inject 0.25 cc. of the fluid. Prior to the start of the treatment, the patient was asked to report any sensation in her pelvis which the injection might initiate. The treatment was stopped if she experienced any sensation whatever. As the cannula was being withdrawn, additional fluid was injected along its path.

Unsuccessful Inseminations

Explanation	Number of Inseminations
Low sperm count	19
Abnormal ovulation	18
Insemination too early	3
Insemination too late	2
Tubal abnormality	3
Unusual menstrual cycle	1
Unexplained	1
Total	47

The blades of the speculum then were closed until they touched the walls of the cervix. A wad of cotton was inserted between the perineum and the handle of the speculum, in order to depress its vaginal end. This maneuver tends to bring the cervix into a postion more at right angles to the posterior blade of the speculum, so that the external os faces and is close to the tip of the posterior blade.

The remainder of the seminal fluid was poured down the posterior blade of the speculum, in order to cover the cervical os. The patient remained in the lithotomy-Trendelenburg position, with her cervical os immersed into the seminal fluid for a period of thirty minutes. At the end of this time, the excess semen in the vagina was removed and the patient was discharged.

RESULTS

Inseminations Resulting In Conception.—Fifty-seven inseminations were performed on 32 women. Ten resulted in conception. Eight of the 10 women conceived as a result of the first treatment; the remaining 2 women conceived on their second inseminations.

Inseminations Failing to Result In Conception.—Forty-seven inseminations failed in their objective (table). Thirty-seven (79 per cent) of the 47 failures were charged to either an inadequate number of moving sperm cells or abnormal ovulation. Each of the failures in these two categories was predicted before the insemination was performed.

Five unsuccessful inseminations were carried out either on the day before or the day after that on which ovulation was predicted. These dates were selected in order to test the validity of the assumption that conception requires that insemination be performed on the predicted day of ovulation.

Three failures are attributed to tubal abnormality. These included either narrowing of both tubes or blockage of one of them.

One patient experienced a menstrual cycle of about forty-five days. Insemination was performed on the twenty-eighth day of her cycle. The variable length of the cycle of this woman, together with the abnormal character of her ovulation reaction during the month of insemination, probably accounted for the failure of her treatment. It should be mentioned at this point that each patient had insemination only once each month.

COMMENT

The patients represented a selected group of infertile couples. They had been treated unsuccessfully by others, and there appeared to be no gross reason why they should not have had children.

When the husband has a high sperm count and the wife ovulates normally, it is our custom to recommend intercourse rather than insemination on the day of ovulation as indicated by the rat test. Insemination was chosen in preference to intercourse in this series of cases for a number of reasons. Many of the couples were well advanced in their reproductive age and were eager to have a child as soon as possible. Many of the husbands had sperm counts that were close to or below the fertility level. Many of the wives ovulated abnormally a great part of the time. In view of all of these observations, insemination appeared to offer the best means for securing conception.

The attempt was made to perform insemination in each case during a month when the patient experienced a normal ovulation reaction. In some cases the patient rarely ovulated normally. In such instances, insemination was carried out during a month when the ovulation reaction was not ideal.

In many cases the husband had a low sperm count and the wife's ovulation reaction was unsatisfactory. In such circumstances, it was unlikely that insemination would be successful. It was carried out reluctantly in these cases at the insistence of the couples concerned. In 1 case, for example, insemination was carried out unsuccessfully five times. The husband's sperm count was so low each time that conception was deemed out of the question.

Two facts stand out from the present study. One of these is the high frequency with which conception occurred on the first insemination. The fact that eight out of ten of the conceptions followed the first insemination seemed to speak well for the accuracy of the rat ovulation test as a method for predicting the day when the egg is available for fertilization.

The second point concerns the high incidence of low sperm counts and of abnormal ovulations in the series. In some cases, both played a role in preventing conception.

When one excludes the failures to conceive which were predicted before insemination was undertaken, it would appear that conception was achieved in an extremely high percentage of cases.

BRUCELLOSIS AS A CAUSE OF SACROILIAC ARTHRITIS

A Study of Its Relationship to Rheumatoid Spondylitis

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Knowledge by physicians of bovine brucellosis as it affects cattle is almost zero. This paucity of knowledge is further complicated by the many accepted fallacies regarding epidemiology, clinical history and control of infection in animals and man. Better dissemination of present day knowledge and more research are needed for a disease which affects 30,000 to 40,000 persons annually in the United States.[1] Physicians generally hold to the idea that infected cattle are destroyed. This is not true. It is economic suicide and a practical impossibility to eradicate bovine brucellosis by slaughter of infected cattle. The generally accepted method of control of this infection in animals by veterinarians is by vaccination of calves and adult cows with strain 19.[2] The adult pregnant cow should be vaccinated before the fourth month of pregnancy; sanitary procedures and immediate ultimate removal of all animals showing a titer of 1 : 100 or higher are required for control of this disease. The hygienic habits of cows are such that one infected animal may easily infect an entire herd in a short period of time. Pasteurization of milk and dairy products for human subjects is the only practical method available in view of the confusing and complex picture regarding the ubiquitous existence of this infection in cattle.

The symptoms of brucellosis are so varied that a patient presenting himself or herself is often labeled neurasthenic. One may list any symptom from headache to constipation and be able to fit the picture in with that of chronic brucellosis. The typical wavelike fever is often likened to the initial phase of typhoid. This will be shown in the report in this article of a case of extremely severe brucellosis. Aches and pains in joints are often noticed. Most often no true arthritis accompanies the articular symptoms. The acute phases of brucellosis, whether starting as an acute disease or an acute flare-up of a chronic disease, are similar to that of typhoid except that the entire story is accelerated. The finding of a positive blood culture is conclusive evidence. An agglutinating titer which fluctuates with the disease is also conclusive evidence. A negative agglutinating titer is of no significance. A positive reaction to a cutaneous test for brucellosis should be interpreted in the same manner as a positive tuberculin reaction. The opsonocytophagic test is of questionable value.

Rheumatic (arthralgia) manifestations usually appear in the later subacute stage of the disease. The agglutinating titer is most often elevated in the rheumatic stage, indicating some degree of immunity. On the other hand, hot swollen joints and/or synovitis are a rare complication. Hardy and others [3] in a reported series of cases of undulant fever found arthralgia in 32 per cent and evidence of actual inflammation of joints in less than 2 per cent. Green and Freyberg [4] concluded that arthralgia is a common symptom of brucellosis but that arthritis is a rare complication. Huddleson [5] and others classified the rheumatic manifestations as fibrositis, neuritis, synovitis, arthritis and spondylitis. Synovitis usually occurred suddenly, the patient awakening with intensely painful swelling of the joints but absence of local redness. The attack of synovitis lasted from twenty-four to forty-eight hours and usually cleared up within a week. Fluid obtained from these joints was sterile and contained an excess of lymphocytes. The knees, ankles, elbows, wrists and fingers were usually involved. Arthritis was more frequently encountered than synovitis. It usually occurred in the subacute stage and lasted a longer period. It was usually monoarticular, and simulated tuberculous disease of the hips when it occurred in children. In a series of 100 cases these authors found the following articular involvement: ankles 40 per cent, elbows 10 per cent, hips 25 per cent and sacroiliac joints 4 per cent. They stressed the absence of roentgenographic findings in these cases. The exception to this statement is spondylitis, in which Phalen and others [6] described destructive lesions of the lumbar vertebrae in 3 cases of spondylitis due to brucellosis. They expressed the belief that spondylitis is probably the most common complicating disorder of the bones and joints referable to undulant fever. These authors agreed that spondylitis as a complication of undulant

Fig. 1.—Roentgenogram taken Dec. 20, 1947, revealing destructive changes in the left sacroiliac joint. There is a loss of definition of the articular margin and a definite oval area of destruction in the bone near the upper part of the joint. This area measures 1 cm. in diameter.

1. Brucellosis in the United States, Current Comment, J. A. M. A. **134**: 786 (June 28) 1947.

2. Dykstra, L. A.: Advantages of Vaccination Against Bovine Brucellosis, J. Am. Vet. M. A. **110**: 96 (Feb.) 1947. Haring, C. M.; Traum, J., and Maderious, W. E.: Vaccination Against Brucellosis, ibid. **110**: 103 (Feb.) 1947.

3. Hardy, A. V.; Jordan, C. F.; Boris, I. H., and Hardy, G. C.: Undulant Fever with Special Reference to Study of Brucella Infection in Iowa, Pub. Health Rep. **45**: 2433 (Oct. 10) 1930.

4. Green, M. E., and Freyberg, R. H.: Incidence of Brucellosis in Patients with Rheumatic Disease, Am. J. M. Sc. **201**: 495 (April) 1941.

5. Huddleson, I. F.: Brucellosis in Man and Animals, New York, Commonwealth Fund, 1943.

6. Phalen, G. S.; Prickman, L. E., and Krusen, F. H.: Brucellosis Spondylitis, J. A. M. A. **118**: 859 (March 14) 1942.

fever is most likely to occur in the subacute stage but stated that it may occur as early as three weeks after the onset of symptoms or may be delayed as long as one year. Huddleson [5] has reported intermittent hydroarthritis as a complication of undulant fever. Palagi [7]

Fig. 2.—Roentgenogram taken at same time as figure 1.

collected 29 cases of spondylitis due to brucellosis from the literature and added 17 of his own cases.

Although many of the authors cited sacroiliac arthritis as occurring as a complication of brucellosis, a careful search of the literature fails to reveal a single report of such a complication. The following report is, therefore, of unusual interest.

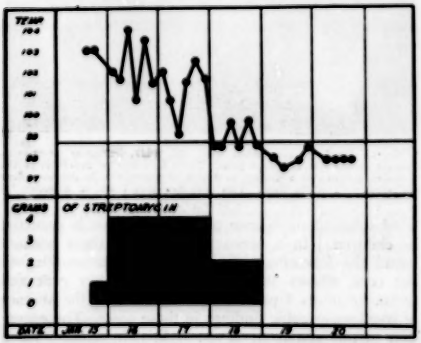

Fig. 3.—Showing temperature response of patient M. C. to streptomycin therapy. Four grams of streptomycin was given in divided doses of 0.5 Gm. at three hour intervals.

REPORT OF CASE

M. C., a veterinarian aged 30, was first seen in December 1946. The onset of the present illness began in the summer of 1941. The first symptoms noticed were headache, undue fatigue and leg aches. He would arise in the morning feeling rather well. A few hours later aches would start in the legs and would be associated with a mild degree of fatigue. Moderate headache would start late in the afternon and would become intense by night. The leg aches and the degree of fatigue would increase decidedly as the day progressed. The patient himself suspected brucellosis in that he had been working in herds of cows in which the degree of brucellosis infection was as high as 50 per cent. He admitted coming in contact often with infected material from the placenta of aborting cows. The cutaneus test for brucellosis was markedly positive in result. Agglutinating titer was positive, 1:40, on May 10, 1941 and 1:160 on May 12. The symptoms of fatigue, leg aches and headaches continued for two weeks and were unassociated with fever. These symptoms recurred yearly. He consulted an eye physician on several occasions because of the severe headaches. He was informed on each occasion that nothing was wrong with his vision.

The next change in his clinical picture occurred in March 1946, at which time he had pain in the left "hip" on and off

Fig. 4.—Roentgenogram taken Jan. 31, 1947, showing partial healing of the area of destruction previously found in the left sacroiliac area. (This view seems to show ankylosis occurring. However, figure 6 definitely shows that this is not the case.)

for a period of two months. Chills and fever were first noted in April. This febrile phase lasted for eight days. Agglutination for Brucella abortus and reactions to cutaneous tests were positive. The symptoms subsided completely after eight days and the patient felt comparatively well until August, at which time he experienced pain in the left "hip," the region of the coccyx and in the right upper quadrant of the abdomen. These symptoms gradually subsided in one month. The next recurrence was in November, at which time severe pain developed in the left sacroiliac area. He was treated with brucella vaccine in dilution of 1:10 subcutaneously. Each injection was followed by a severe reaction of pain in the left sacroiliac area. Whirlpool bath treatment of the lower extremities and heat locally to the left sacroiliac area aggravated the condition. He had to use crutches the latter part of December owing to severe pain in the left sacroiliac area. Examination on December 20 revealed a well developed, well nourished white man

7. Palagi, P.: Le localizzazioni vertebrali nelle febbre ondulante, Chir. d. org. di movimento **20**: 31, 1934; cited by Phalen, Prickman and Krusen.[6]

whose nude weight was 164½ pounds (74.6 Kg.), height 5 feet 11 inches (180.3 cm.), standard weight 166 pounds (75.3 Kg.), temperature 98.6 F., pulse rate 76 and blood pressure 100 systolic and 70 diastolic. The pupils reacted to light and accommodation. Tonsils have been removed. Roentgenograms of the teeth and gross appearance of the teeth and gums were negative. The posterior part of the pharynx appeared innocent. Examination of the neck, lungs, heart and abdomen revealed no abnormality. Normal motion was present in all joints, but there was extreme tenderness over the left sacroiliac area. The knee jerk on the left side was diminished as compared to the right side. Sensation to heat, cold, pain and touch was normal throughout.

The urine was normal. The red blood cells were 5,710,000, the hemoglobin 16.9 Gm., the white blood cells 9,750. The Schilling differential count revealed stabs 6, segmented cells 60, lymphocytes 20, monocytes 4 and eosinophils 3 per cent. The sedimentation rate was elevated at 25 mm. per hour.

Fig. 5.—Roentgenogram taken at same time as figure 5.

The upper limit of normal by this method is 10 mm. per hour. The blood uric acid was normal at 3.4 mg. per hundred cubic centimeters. Throat culture revealed a rare Streptococcus viridans organism. Agglutination for Brucella abortus was positive in a titer of 1:320. Five localized areas of healed scars measuring 4 mm. by 4 mm. in diameter were present on both forearms as a result of the vaccine that the patient had received some weeks previously. These indicated the severe nature of reaction that the patient had to the B. abortus vaccine. Roentgen examination of the lumbosacral revealed the following (figs. 1 and 2): "Lumbosacral spine: There are five lumbar vertebrae. The alinement of the bones is good, with a normal degree of lumbar lordosis. The intervertebral disks, centra and intervertebral articulations are well visualized and appear normal. Lumbosacral articulation is normal.

"Definite destructive changes are noted in the left sacroiliac joint with loss of definition of the articular margins and a definite oval area of destruction of the bones near the upper border of the joint, which measures 1 cm. in diameter. Widening of the joint space of the left sacroiliac joint is also evident at its lower margin and there appears to be definite destruction of the articular surfaces in this area. The sacrum and coccyx are otherwise normal. The hip joints are normal.

"Radiographic conclusions: The findings are those of destructive changes in the left sacroiliac joint. This lesion is probably

Fig. 6.—Oblique roentgenogram of left sacroiliac area shows no evidence of ankylosis.

Fig. 7.—Roentgenogram taken at same time as figure 6.

secondary to a bacterial infection and may be consistent with brucellosis involving the joint."

The patient was treated symptomatically and with complete bed rest. The symptoms gradually subsided under this management until Jan. 14, 1947. A shaking chill of one and one-half hours' duration developed, and his temperature rose to 104 F.

on this date. This episode was repeated on Jan. 15, 1947. On the latter date streptomycin was started. He was given 0.5 Gm. of streptomycin intramuscularly every three hours. An initial blood culture was negative, and agglutination for B. abortus which was taken this day and reported two days later was positive in dilution of 1:640 titer. The response of the temperature curve and the amount of streptomycin given are shown in graph form in figure 3. A palpable spleen was felt on January 16 and January 17. Rose spots not unlike those of typhoid appeared on the abdomen on the later date. On January 22 the patient reported feeling fine and having practically no pain in the sacroiliac area. On February 12 he began to have a low grade fever (100 to 101 F.) in the afternoon. The temperature returned to normal three days later. It has remained normal ever since. At that time the soreness increased in the left sacroiliac area. This apparent flare-up was precipitated by allowing the patient out of bed. A roentgenogram of the lower part of his back was taken on January 31. A roentgenogram of the lumbosacral portion of the spine, taken Jan. 31, 1947, revealed the following (figs. 4 and 5):

"Lumbosacral spine: The area of destruction previously reported in the lower margin of the left sacroiliac joint and near the upper margin of the sacroiliac joint are again seen as have been previously reported. Both areas of destruction are slightly larger in this examination than on the previous examination. The intervening positions of the sacroiliac joint show loss of definition and there is a suggestion of bony trabulae traversing the joint space.

"No other significant abnormality is demonstrable in the lumbosacral spine. Radiographic conclusions: The area of destruction previously reported in the left sacroiliac joint are again evidenced. Since the preceding examination a suggestive area of 'ankylosis' has developed in the midportion of this joint. This would be consistent with partial healing of the pyogenic arthritis of this joint."

Laboratory Data on Patient M. C.

Date	Sedimentation Rate	Titer	Blood Culture	Remarks
12- 2-1946	25 mm. per hour	1:320	.....	Roentgenogram
1-13-1947	28 mm. per hour	1:640	Negative	Comfortable
1-14-1947	.....	.....	.....	Chill and fever
1-15-1947	.....	1:640	Negative	Streptomycin started
1-22-1947	.....	1:1,280		
1-31-1947	23 mm. per hour	1:1,280	.....	Roentgenogram
2-10-1947	31 mm. per hour	1:640	Negative	
3-12-1947	9 mm. per hour	.....	.....	Comfortable

Oblique roentgenograms of the sacroiliac joints taken failed to reveal true ankylosis (figs. 6 and 7).

The low grade fever reported February 12 disappeared at the end of three days. Clinical improvement has been constant ever since.

COMMENT

The diagnostic possibilities in this case are: (1) neoplastic disease, (2) sacroiliac arthritis due to Br. abortus infection, (3) sacroiliac arthritis due to tuberculosis, and (4) early involvement of the sacroiliac joint as an early sign in rheumatoid spondylitis. Neoplastic disease may be ruled out because of localization of disease to the joints and the duration of the illness and the laboratory findings. This patient was a veterinarian and might be easily infected with bovine tuberculosis. Tuberculin tests and roentgenograms of the lungs were negative in result. Also, the history indicates that the patient first began to have some discomfort in his left sacroiliac joint a year before the present period of hospitalization. These symptoms lasted a short while, and then a period of ten months elapsed without any symptoms. When the pain recurred, ten months later, it was of a most severe nature. This long interval of freedom of symptoms in the back is against any possible diagnosis of tuberculosis. The factors in favor of a diagnosis of Br. abortus infection are overwhelming in spite of the fact that four attempts to obtain a positive blood culture were futile. The patient admitted having delivered calves from aborting cows. And although it is common for verterinarians to wear long gloves in such procedures, it must be remembered that the position of the accoucheur at the tail end of the cow is such that infection may easily enter the gastrointestinal tract. A not too vivid imagination is required to appreciate this point. The rise in agglutinating titer from 1:320 to 1:1,280 for Br. abortus is of diagnostic significance. The fact that 0.1 cc. of 1:10 Br. abortus vaccine given subcutaneously caused extreme areas of necrosis is of some significance. The opsonocytophagic test is of such questionable significance that it was not done in this case. The localization of the disease in the sacroiliac joints with subsequent healing as shown by the second roentgenogram taken on Jan. 31, 1947 suggested the possibility that Br. abortus might be an etiologic agent in rheumatoid spondylitis. There are several decided differences, however, in the roentgenograms of this case and those of rheumatoid spondylitis. One never sees areas of destruction in the joints as shown in both figures 1 and 3 in this case. Also, there is more production of bone in the sacroiliac area and not destruction of bone in rheumatoid spondylitis. It might be argued that at least in some instances sacroiliac arthritis, which has previously been thought to be a part and parcel of the syndrome of rheumatoid spondylitis, might be due to this organism.

Twenty cases of rheumatoid spondylitis were reviewed by me. Blood cultures, blood agglutination tests and cutaneous tests for brucellosis were performed in 20 cases of typical rheumatoid spondylitis. Blood cultures were negative in all 20 cases. Cutaneous tests for brucellosis were negative in 20 cases. The agglutinating titer for Br. abortus was weakly positive in 2 cases. One patient, aged 27, gave a seventeen year history of Br. abortus infection. The agglutinating titer was positive in 1:20 titer. Cutaneous tests and blood cultures were negative in result. Roentgen examination of the lumbosacral area of this patient showed blurring of the sacroiliac joints with production of bone on either side of the joints. The findings were considered to be typical of early rheumatoid spondylitis. No involvement was found in the spine. Another patient, aged 32, was given a diagnosis of rheumatoid spondylitis. He showed typical changes in the sacroiliac joints and had lost his lumbar curve. This person's reactions to cutaneous tests and blood cultures were negative for Br. abortus. He gave a positive agglutinating titer in a serum of 1:20. One month later this was repeated and found to be 1:40. None of the 20 patients showed destructive regions in the sacroiliac area shown by patient M. C. It might be safely concluded that rheumatoid spondylitis is not caused by Br. abortus infection. There might be isolated instances in which sacroiliac arthritis is caused by this organism just as in the case reported here.

However, the bone production of the joints, the tendency for the poker back spine, the involvement of the apophysial joints of the entire vertebral column with eventual bone ankylosis and calcification of the surrounding ligaments is not the picture of Br. abortus infection.

The initial response to streptomycin appeared encouraging. However, it must be remembered that the patient had a similar episode of chills and fever ten months previously and had no streptomycin. The temperature chart was almost identical. That is, the temperature dropped to normal in a period of approximately three days. In spite of this, it must be emphasized that four days' medication with streptomycin in a person who has had Br. abortus infection over such a long period of time is not a fair clinical trial. The reason for stopping the streptomycin in this case was the severe local inflammation in the buttocks produced by the injections. The patient refused to take any more streptomycin. On Feb. 9, 1947 he again began to have a low grade fever (100 to 101 F.) in the afternoon, indicating that the disease was still active. It should be emphasized that the patient felt symptom free while at complete bed rest and at no other time. Dr. E. T. Wentworth, consulting orthopedic surgeon of the Rochester General Hospital, was called into consultation as to whether or not fusion of the sacroiliac joints, fixation of the joint by some mechanical belt or incision and drainage was in order. He supplied a sacroiliac belt and suggested continued complete bed rest. This treatment would seem to be the most efficacious. His objection to fusion was that (*a*) the joint would fuse spontantously and (*b*) the incision might accidentally enter the bone abscess and a chronic drainage sinus result.

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SUMMARY AND CONCLUSION

Br. abortus infection can cause sacroiliac arthritis. The initial process is one of destruction of the joints, causing a local abscess and healing by ankylosis of the joint. Sacroiliac arthritis due to brucellosis should be considered in studying early cases of so-called rheumatoid spondylitis in which the pathologic changes observed roentgenographically are centered in the sacroiliac joints. Brucella abortus is not a factor in the cause of rheumatoid spondylitis. The treatment of choice in sacroiliac arthritis due to brucellosis is bed rest and a diet high in calories and in vitamins. This conclusion is drawn from the cases of spondylitis reported in the literature and this reported case of sacroiliac arthritis. No conclusive evidence is offered that streptomycin is of value in the treatment of sacroiliac arthritis due to brucellosis. However, it must be admitted that streptomycin was used for an insufficient period of time in the treatment in this case. It is suggested that streptomycin in an equally divided dose of 4 Gm. daily should be used over a long period of time in a manner similar to that in which penicillin is employed in the treatment of subacute bacterial endocarditis. Streptomycin is a much more toxic drug than penicillin. The suggestion that it be used over a longer period of time should be taken with a great deal of caution. Recent studies* suggest that administration of streptomycin and sulfadiazine is the treatment of choice.

8. Keefer, C.: Personal communication to the author.

COHESIVE BANDAGE FOR CLUBFOOT IN NEWBORN INFANTS

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Chicago

The earlier clubfoot (talipes equinovarus) is treated, the better. This has been known for years, but it was impossible to treat newborn infants because of technical difficulties. Orthopedic treatment was delayed until the baby was 3 months old, when correction could be held by means of a plaster of paris cast. A technic that makes immediate treatment possible is desirable. Repeated

Fig. 1.—Deformities associated with talipes equinovarus of the left foot. *A*, congenital pes valgoplanus of the right foot, with anomalies of toes. *B*, congenital anomalies of fingers (same patient).

manipulation by the parents is not dependable, and repeated manipulation by the physician cannot be carried out frequently enough to be of much value. Manipulation in itself is not sufficient in any case; there must be retention of the correction that is obtained. The size of the foot has made this a problem. The plaster technic is extremely difficult and is generally considered impossible until the infant is 3 months old. Another disadvantage of the cast is that it interferes with development of the foot and leg, resulting in muscle atrophy. Retention of correction by means of adhesive tape is impractical, since the tape irritates the skin. By means of splints, such as the Denis-Browne splint, treatment

can be started when the infant is from 1 to 3 months old, and excellent results are claimed for this method of treatment.

With the introduction of the cohesive bandage technic, treatment is possible immediately after birth. The bandage will stick to itself but will not adhere to the skin, so that it cannot irritate the skin. It permits early correction of each part of the deformity.

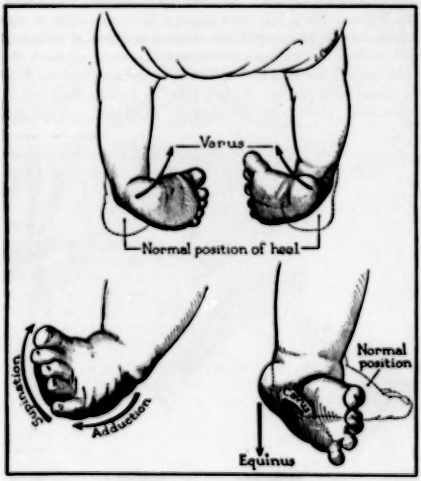

Fig. 2.—Components of a clubfoot deformity.

The younger the child, the more rapid is the rate of growth. For this reason, the earlier the correction is started, the more the growth factor will be utilized in obtaining correction. At the same time, the structures are softer and the foot is more malleable and more responsive to treatment.

It is generally believed that the deformity occurs as a result of retention of a developmental position in utero. If the normal development is arrested early, the anatomic changes will be severer than if the unfolding process is interfered with in the latter part of uterine life. There is also a true anomalous type of congenital clubfoot, which is often associated with other deformities, such as malformation of the hand or congenital dislocation of the hip (fig. 1). In both types of deformity, the heel is in the varus position, the anterior part of the foot is adducted and supinated and the foot is plantar-flexed in the equinus position. A foot in this position has a cavus deformity (fig. 2). Associated with these structural changes is an imbalance between the power of the muscle groups; the inverters are stronger than the everters.

To obtain a normal foot it is therefore necessary to correct the deformity and to establish normal balance between the muscles. To obtain normal muscle balance the foot must be brought into the opposite direction and used in this position until the everters have normal power. Correction is never complete, no matter how well the foot looks, until the foot can voluntarily be brought into eversion. The term "eversion" as used here means bringing the foot into pronation and abduction and the heel into the valgus position, and the term "inversion" means a combination of supination and adduction with the heel in the varus position.[1] In every case the foot must be brought into overcorrection. This is essential. Furthermore, the overcorrection should be obtained before weight bearing is started, since weight bearing with overcorrection will tend to correct the foot further, while weight bearing with any deformity present will tend to increase the deformity. For this reason, the earliest possible correction of the deformity and retention of the overcorrected position are most advantageous.

The key to the correction of the clubfoot deformity is full correction of the varus deformity. The varus deformity of the heel is the most difficult part of clubfoot to correct, and the deformity will always recur unless true correction is obtained. The equinus deformity is the most readily corrected, but this should never be accomplished until the other components have been obviated. If the tendo achillis is lengthened first to correct the equinus deformity, the counterforce by which the varus distortion and the supination are corrected is removed and satisfactory conservative treatment is prevented.

The cohesive bandage technic consists, first, in cleansing the foot and leg for at least two minutes with 1:4,000 aqueous solution of benzalkonium chloride. Benzalkonium chloride has the advantage of cleansing the skin and reducing the bacterial count to a minimum without irritation. After the skin is dry, the foot and leg are painted with compound benzoin tincture, with a sterile applicator. When the benzoin tincture has dried, the cohesive bandage is applied. The leg is encircled just above the bulge of the gastrocnemius muscle (fig. 3 [1]). The bandage is applied flat, with no wrinkles, and to accomplish this it is held at its full width while being wrapped. A second bandage is applied in the same manner as the first, overlapping the first by half. This is done by the physician, with an assisting nurse

(Left foot illustrated)
Bandage encircles the leg just below the knee
Note: bandage draws the heel into valgus (an ankle depth 2 or 3 times)
Entire foot is encircled with bandage
1
2
3
Bandage brings front part of foot into abduction and pronation
Reinforcement — lateral view
Completed cohesive bandage
4
5
6
7 Completed bandage
Front
Back
Each step that is described for the cohesive bandaging is repeated with waterproof adhesive tape.

Fig. 3.—Steps in the application of the cohesive bandage.

1. Hauser, E. D. W.: Diseases of the Foot, Philadelphia, W. B. Saunders Company, 1939.

holding the leg and cutting the bandage with a 6 inch (15 cm.) bandage scissors. This encircling bandage serves as an anchor for the bandage which is to be used for correction of the varus deformity of the heel, since the cohesive bandage will stick to itself but not to the skin.

Fig. 4.—Results of treatment with cohesive bandage. *A*, and *B*, bilateral clubfoot in a patient aged 7 months. *C* and *D*, appearance of the feet after treatment (age 1½ years).

To correct this deformity of the heel, the cohesive bandage is now started from the encircling anchor bands, on the medial side of the leg. The physician brings the anterior part of the foot into abduction, pronation and dorsiflexion, thus forcing the heel into the maximum amount of valgus position that can be obtained. Then the bandage is brought along the medial side of the leg, ankle and foot, around under the heel and up the lateral side of the leg, to be attached to the encircling bands on the lateral side. This stirrup type of bandaging is repeated, overlapping the previous strip by half, and the heel always brought into the valgus position (fig. 3 [2]). Then an encircling bandage is again applied, overlapping by half, down to the ankle (fig. 3 [3]).

Next, the fore part of the foot is corrected. The anterior part of the foot is encircled twice for an anchor bandage, overlapping by half. The anterior part of the foot is then brought into pronation and abduction, and the cohesive bandage is started from the anchor on the dorsum of the foot, on the medial side. It is brought under the foot, and, with the foot pulled into abduction and pronation, the bandage is taken obliquely across the dorsum of the foot and attached to the medial side of the leg above the ankle (fig. 3 [4]). A second strip is applied, overlapping the first by half (fig. 3 [5]). These are reinforced until sufficient strength is obtained to hold the corrected position. Special care is necessary to obtain a flat bandage over the anterior part of the ankle, since the skin in this area becomes redundant with the correction and there is a tendency for creasing. The entire foot and leg are covered with the bandage. The dorsal and plantar surfaces of the toes are included, so that only the very tips of the toes are visible. The entire bandage is then molded, so that everything is smooth, and the foot and leg are thus in a soft smooth well fitted encasement (fig. 3 [6]).

In order to obtain a support that is adequate to hold the foot against the constantly contracting muscles, it is necessary to have a much stronger bandage. This is accomplished by reinforcement with water-proof adhesive tape. A roll of 2 inch (5 cm.) adhesive tape is applied to the upper part of the leg in the same manner as that described for the cohesive bandage. The entire technic is now repeated with the adhesive tape, the foot again being brought more into the valgus position, with further abduction and pronation as the tape is applied. The entire foot and leg are encircled with sufficient layers of the adhesive tape to counteract the tendency for the foot to resume its original abnormal position (fig. 3 [7]). These cohesive and adhesive bandages are manually molded, and there is smooth and even pressure throughout the entire extremity.

The interval between changes of bandage is variable, depending on the age at which the correction is started and on the severity of the deformity, as well as the distance from which the patient is brought. Usually the newborn infant with clubfoot is seen at the hospital a day or so after birth, and treatment is started at once. The technic for a newborn infant is the same as previously described, with the advantage that, since the child can easily be seen each day at the hospital, the bandage is reinforced daily, with more correction in each treatment. This is continued for a period of a week. Correction is so rapid at this stage that the bandage becomes ill fitting and an entirely new encasement is applied at the end of a week. This is again reinforced daily, and a new bandage is applied the day the mother takes the baby home. The child is then brought to the office two weeks later, when the bandage is again renewed. The treatment is followed through at the office, and the interval is usually two to three weeks, because of the rapid change of the foot and the loosening of the bandage so that it becomes less effective.

Fig. 5.—Results of treatment with cohesive bandage. *A*, severe bilateral clubfoot in a patient aged 2 months. *B* and *C*, appearance of the feet after treatment (age 2 years and 4 months).

Not only must the deformity be corrected, but any tendency to recurrence of the deformity must be prevented, and for this reason the correction is always retained until the child walks. Since the deformity is corrected so rapidly in the early stage, it is sometimes difficult to make the parents understand the need

for continuous retention of the foot in the overcorrected position until walking in the overcorrected position is assured. For this reason it is important to explain the plan of treatment to the parents at the time it is started and to emphasize the necessity for following through, because there must be overcorrection and it must be retained until walking in the overcorrected position is assured.

It is believed that the internal rotation is associated with the adduction of the foot. The early correction of the foot will influence the tibial deformity.

In some cases a tight tendo achillis will not allow full correction of the equinus deformity. Before the child walks and all other corrections are obtained, a subcutaneous tendon lengthening is done. When the child starts to walk, the outer side of the heel and sole is raised. A brace is used to hold the foot in abduction and external rotation.

A review of 70 consecutive cases showed excellent correction with treatment by means of this cohesive bandage technic (figs. 4 and 5). The advantage of early treatment was clearly established. In 6 cases the tendo achillis was lengthened; 3 patients had plantar fasciotomies, and 2 required further correction at 4 years and another at 6 years of age. In 5 the deformities must be considered congenital anomalies. With the exception of these normal results were obtained.

SUMMARY AND CONCLUSIONS

The earlier the clubfoot deformity is treated, the better. The usual type of clubfoot is due to retention of an early position in utero. This can be corrected, so that a normal foot is obtained in each case. Some cases of clubfoot have involved organic changes. Here early and persistent treatment gives the best results. Overcorrection of the position and retention of the overcorrected position until the child walks are necessary. Braces, and occasionally casts, may be needed to assure correct gait.

A new technic with cohesive bandage is described, which permits accurate and early correction of clubfoot. A summary of results in 70 patients treated during a period of six years clearly established the advantages of this type of treatment.

720 North Michigan Avenue.

Treatment of Pernicious Anemia.—The most satisfactory method of treating patients with pernicious anemia, or any type of macrocytic anemia with a megaloblastic bone marrow, is by the intramuscular injection of 1 cc. of refined liver extract, containing 15 units daily for a period of two weeks. At the end of this time I would give 1 cc. (15 units) three times weekly until the red blood cell count is at least 4,500,000 per cubic millimeter and the hemoglobin a minimum of 12 Gm. (83 per cent.) The maintenance dose, in my opinion, is 1 cc. (15 units) every two weeks, although some have stated that the blood may be maintained in a normal condition by giving such a dose once a month. There is one danger which should always be kept in mind. If an inadequate dose of liver extract is employed, the red blood cell count and hemoglobin may fall below normal limits. Although there may be only a slight reduction, nevertheless there is always the possibility that nervous manifestations may develop, or if already present they may progress, sometimes with alarming rapidity. In general, it may be said that when the blood is kept in a normal condition, the nervous changes, if present, may improve greatly, or at least that they will not progress. If they are not present before treatment is started, they will not appear during the course of adequate therapy.—Sturgis, Cyrus C., M.D., *Official Journal of the Interstate Postgraduate Medical Association—Postgraduate Medicine*, June 1948.

Clinical Notes, Suggestions and New Instruments

PARALYSIS OF LEFT VOCAL CORD FOLLOWING STREPTOMYCIN THERAPY

LAWRENCE K. GUNDRUM, M.D.
Los Angeles

The development of sensitivity to streptomycin when used over long periods of time is not uncommon. Many reports [1] of temporary and occasionally permanent injury to both the vestibular and auditory portions of the eighth nerve have been recorded on their terminals. Just why the eighth nerve has been the only one injured is unexplained. It is reasonable to suppose that other nerves might be similarly affected. However, a search of the literature failed to show injury to any other one from the use of streptomycin.

The following case is reported to show a possible effect of streptomycin sensitivity on the recurrent laryngeal nerve.

REPORT OF A CASE

Mrs. W. L., a white woman 33 years of age, was admitted to the hospital Nov. 10, 1947, with complaints of pain in the right flank centered in an area about the size of a quarter, pain being constant, but more noticeable in the recumbent position, and always accompanied with urgency and frequency of urination.

Past history showed the patient to have had no serious illnesses except an attack of arthritis five years previously. She had an unsually large appetite and drank twenty to twenty-five cups of coffee daily.

Physical examination, including observation of the ears, nose, throat, heart and lungs and neurologic examination, showed nothing abnormal except pain and tenderness in right flank, at about the level of the third lumbar vertebra. Roentgen examination showed decided ptosis of the right kidney, with resultant kinking of the ureter in the pelvic region. On November 17 a suspension of the kidney was done. From December 1 to December 8, 11 Gm. of streptomycin and 2,000,000 units of penicillin were given intramuscularly. About December 20 the patient noticed a lump in her throat; she had some difficulty in swallowing liquids. She became progressively worse, and about Jan. 1, 1948, some hoarseness developed. Examination of the ears, nose and throat on January 13 showed complete paralysis of the left vocal cord. Audiometric tests showed a loss of all tones of less than 5 decibels. Responses to tests of the vestibular apparatus were within normal limits. The reaction to an intradermal test for sensitivity to streptomycin was negative. Kolmer, Muzzini and Kahn reactions were negative. Another complete physical examination, including roentgenographic examination of the chest, failed to reveal any pathologic change. The patient was given large doses of vitamin B complex and seen at weekly intervals until February 20, with no apparent change in the laryngeal paralysis.

COMMENT

This case of laryngeal paralysis is presented as one of possible nerve injury which may be due to sensitivity to streptomycin.

1930 Wilshire Boulevard.

From the Departments of Urology and Otolaryngology of the Queen of the Angels Hospital.

1. Rake, G.; Hamre, D.; Kavanagh, F.; Koerber, W. L., and Donovick, R.: The Toxicity of Streptothricin, Am. J. M. Sc. **210**: 61-66 (July) 1945. Molitor, H.; Greessle, O. E.; Kina, S.; Mushell, C. W., and Silber, R. H.: Some Toxicological and Pharmacological Properties of Streptomycin, J. Pharmacol. & Exper. Therap. **88**: 151-173 (Feb.) 1946. Brown, H. A., and Hinshaw, H. C.: Toxic Reaction of Streptomycin on the Eighth Nerve Apparatus, Proc. Staff. Meet., Mayo Clin. **21**: 347-352 (Sept.) 1946. Mushett, C. W., and Martland, H. S.: Toxic Effects on the Nervous System, Arch. Path. **42**: 625-626 (Dec.) 1946. Fowler, E. P., Jr., and Seligman, E.: Otic Complications of Streptomycin Therapy, J. A. M. A. **132**: 87-91 (Jan. 11) 1947. McDermott, W.: Neurologic Reactions, Am. J. Med. **2**: 496-499 (May) 1947. Farrington, R. F.; Hull Smith, H.; Bunn, P. A., and McDermott, W.: Neurologic Abnormalities, J. A. M. A. **134**: 684-688 (June 21) 1947. Hawkins, J. E., Jr., and Mushett, C. W.: Vestibular Disturbances Produced in Animals by Streptomycin, Am. J. M. Sc. **213**: 755 (June) 1947.

Council on Foods and Nutrition

The following report has been accepted by the Council.

JAMES R. WILSON, M.D., *Secretary.*

THE FORTIFICATION OF MILK WITH VITAMINS A AND D

For many years the Council on Foods and Nutrition has approved fortification of milk with vitamin D. The Council has stated the opinion that fortification of milk as a general purpose food with vitamin A is not in the interest of public health. However, no objection is taken to the concurrent presence of vitamin A when the preparation used for fortifying with vitamin D contains vitamin A in natural association.

The Food and Drug Administration in defining a standard of identity for evaporated milk took no exception to the concurrent presence of both vitamins A and D in fortifying agents when both vitamins are derived from natural sources.

Fish liver oil concentrates, sometimes used for fortifying milk with vitamin D, often contain relatively large amounts of vitamin A. Milk fortified with such concentrates has been accepted by the Council, and a statement of vitamin A content has been permitted on the label. However, claims concerning increased nutritive value because of the vitamin A content have not been permitted.

Before the Council can accept claims for milk fortified with vitamin A it seems desirable to have evidence that such fortification is in the interest of public health, even though the procedure is apparently harmless. Such evidence appears to be lacking. Diets that contain appropriate amounts of milk are likely to contain adequate vitamin A. The evidence now available does not warrant a change in the standing decisions of the Council on Foods and Nutrition concerning specific fortification of specific foods to include fortification of milk with vitamin A.

In its acceptance of milk fortified with preparations from natural sources that contain both vitamins A and D, the Council has assumed that the presence of vitamin A is incidental. In those instances in which the vitamin A component is adjusted to supply a specified amount, presumably the amount of vitamin A is not incidental and fortuitous. In any case, the addition of vitamin A does not constitute sufficient reason for acceptance of advertising that suggests special nutritional advantages. The addition of vitamin A to milk, already a good source of this nutrient, may add to the cost of the milk and is without apparent advantage to public health.

ACCEPTED FOODS

The following products have been accepted as conforming to the Rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Mead Johnson and Company, Evansville, Ind.

PROTESUM consists of nonfat milk solids, calcium caseinate, dextrose and cocoa.

Analysis (submitted by manufacturer).—Moisture 3%, ash 7%, fat (ether extract) 2%, protein (N × 6.25) 42%, carbohydrates other than crude fiber (by difference) 46%.

Calories.—3.7 per gram; 105 per ounce.

Vitamins.—No vitamin claims are made, but water soluble vitamins of milk are contained in the product.

Use.—A whole protein supplement for oral use when extra protein or a concentrated source of protein is required in the diet.

Mead Johnson and Company, Evansville, Ind.

LONALAC consists of lactose, milk fat, casein, calcium phosphate monobasic, potassium carbonate, potassium chloride, calcium hydroxide, calcium chloride, calcium carbonate, magnesium oxide, thiamine, nicotinic acid and riboflavin.

Analysis (submitted by manufacturer).—Carbohydrate (by difference) 38%; fat (ether extract) 28%; protein (N × 6.38) 27%; ash (including sodium 0.02% and potassium 1.4%) 5.5%, and moisture 1.5%.

Calories.—Per gram, 5; per ounce, 145.

Vitamins.—No specific claims for vitamin content are made, and vitamins which are added are designed merely to replace that quantity of vitamins normally present in milk.

Use.—For use in diets of restricted sodium content.

Council on Physical Medicine

The Council on Physical Medicine and the American National Red Cross have adopted the following statement.

HOWARD A. CARTER, *Secretary,*
Council on Physical Medicine.
CARL J. POTTHOFF, M.D.,
The American National Red Cross.

RESUSCITATION

Joint Statement Issued by the Council on Physical Medicine and the American National Red Cross

THE MANUAL PRONE PRESSURE METHOD RECOMMENDED FOR USE BY NONMEDICAL PERSONS

There are many ways of giving artificial respiration. But in asphyxia it is vitally important that artificial respiration be started without a moment's delay. Most victims of asphyxia will die if delay occurs in providing resuscitation while apparatus is being brought to the scene or medical help is being obtained. Accordingly, the general public should be taught a method for giving artificial respiration that can be administered without apparatus of any kind.

Many manual methods of giving artificial respiration have been proposed. The American Red Cross and other organizations have taught the prone pressure method. This method has several important advantages: 1. It requires no apparatus of any kind and therefore can be started immediately. 2. It is easy to administer properly and has been proved effective in countless cases of asphyxia. 3. The victim lies prone; thus there is little danger of occlusion of the respiratory passage by the tongue. The Council on Physical Medicine of the American Medical Association advises that the Red Cross continue to teach the prone pressure method.

INHALATORS AND RESUSCITATORS

An inhalator is an apparatus that delivers to the victim gas, usually oxygen, under low, continuously positive pressure. The resuscitator delivers the gas under either alternating positive pressure or alternating positive and negative pressure. Many apparatus now available can be adjusted to act either as inhalators or resuscitators.

The Council on Physical Medicine recommends that the gas administered by resuscitator or inhalator to asphyxiated victims be oxygen rather than a mixture of oxygen and carbon dioxide.

When the face mask of a resuscitator is in place and the apparatus functions, simultaneous manual artificial respiration is not necessary because the alternate blow or the alternate blow and suck action of the resuscitator ventilates the victim's lungs.

If an inhalator is used on a victim and he is not breathing, simultaneous manual artificial respiration is necessary. If a victim needing oxygen is breathing, the inhalator adjustment should be used; then manual artificial respiration is not necessary.

In earlier years medical workers looked with disfavor on blow and suck machines. The best resuscitators have now been improved to such extent that if properly used they do not damage the lungs and do in some cases secure better ventilation of the lungs than manual artificial respiration does.

SELECTION OF A RESUSCITATOR

It is important that a resuscitator of reliable type be used, and that it be checked at times to assure its proper adjustment. If the positive or negative pressures increase or decrease appreciably, insufficient ventilation of or damage to the victim's lungs may occur. It is highly important that people who operate the resuscitator be adequately trained concerning when and how to use the apparatus.

Any manufacturer of resuscitators may submit his product together with his advertising and directions for use to the Council on Physical Medicine of the American Medical Association for study and acceptance. The Council gives its seal of acceptance if the apparatus is reliable, effective for the uses intended, and free from unnecessary danger, and if the directions are adequate and the advertising ethical. Any organization wishing to purchase a resuscitator can obtain a list of Council-accepted resus-

citators by writing the Secretary, Council on Physical Medicine, American Medical Association, 535 North Dearborn Street, Chicago, Illinois.

THE ROLE OF THE RED CROSS

The Red Cross will continue to teach the manual prone pressure method for administering artificial respiration. It will emphasize to the public that, although at times a resuscitator has value, it is vitally important to start manual artificial respiration immediately and to continue efforts until a resuscitator has actually commenced ventilation of the lungs. If newspaper, magazine and radio articles bring the resuscitator to general public attention, there is great danger that the public will procrastinate in giving manual artificial respiration while awaiting a resuscitator. Therefore, the Red Cross and all publicists should stress the need for manual artificial respiration, and in stories of rescues where both methods are used they should stress the value gained from the manual efforts.

The Red Cross will not guide the selection of resuscitators and inhalators by local rescue squads or teach when and how to operate them. Such advice should come from the Council on Physical Medicine and from local medical committees authorized by the local medical society to act as advisors to rescue squads. Any inquiries to the Red Cross for such information and teaching should be referred by Red Cross officials to the Council and to the Advisory Medical Committee on Rescue Squads of the local medical society.

In the opinion of the Council, operators should possess detailed knowledge of the mechanical construction of resuscitators and inhalators and should have some knowledge of the physiology of respiration. If the apparatus are to be used intelligently the officials of the community should consult the local medical society and request the name of a physician who will assume the responsibility to instruct the operators. It is important to have a responsible person to make periodic inspection of the equipment and to assist in teaching other instructors.

IMPORTANT POINTS TO BEAR IN MIND

1. A nonbreathing person should be given artificial respiration immediately by the most convenient method at hand, which in the great majority of cases is the prone pressure method. Sometimes a few seconds or longer elapse before the victim can be brought into a proper position. If so, the lower part of his chest should be rhythmically compressed and released while he is being brought into position.

2. The air passages must be free from obstruction. The tongue sometimes presses back into the pharynx, shutting off the airway. The first aider should insert two fingers far back into the mouth and press downward and forward on the tongue. Thus the tongue is brought into proper position. If the victim lies prone, the tongue will then remain in this position. If the victim is not prone, it may be necessary to have an assistant hold the tongue in good position with a handkerchief. Fluid or vomitus may also obstruct the passageway somewhat. If the victim is prone, such fluid usually flows out quickly while artificial respiration is given. However, it may be advisable to wipe out the mouth, reaching far back with a handkerchief.

These measures of bringing the tongue forward and of removing other obstruction should be accomplished at once. If only one first aider is present, he should execute these measures between compressions, starting after the first one.

3. If an accepted resuscitator is at hand, it may be substituted for manual artificial respiration with assurance that sufficient ventilation will occur. Manual artificial respiration, however, is all-important while the rescuer awaits a resuscitator. Use of the manual method should continue while the resuscitator is being adjusted, so that the victim's lungs constantly receive air.

4. If a person has not been breathing for five to ten minutes, the chance of survival is slight, even if the most efficient inhalators or resuscitators are used. Nevertheless, an attempt at resuscitation should be made when the slightest chance for recovery exists. Artificial respiration should never be stopped when a pulse or heart beat can be felt. Recovery of normal breathing may be long delayed, especially in cases of electric shock. Most patients recover within about one-half hour, but some have been resuscitated after several hours of artificial respiration.

REPORT OF THE COUNCIL

The Council on Physical Medicine has authorized publication of the following report. HOWARD A. CARTER, *Secretary.*

ARMSTRONG X-4 BABY INCUBATOR, MODEL 500 ACCEPTABLE

Manufacturer: The Gordon Armstrong Company, Inc., Bulkley Building, 1501 Euclid Avenue, Cleveland 15.

The Armstrong X-4 Baby Incubator, Model 500, is a device for housing newborn infants under conditions of controlled temperature, humidity and oxygen concentration.

It consists of a steel-constructed crib provided with a three-ply safety glass lid that gives full length view of the occupant. It is provided with connections for the inflowing oxygen and with a cable for the current needed to operate the heater. The apparatus operates on alternating current only, but functions on 110, 150 or 220 volt lines by simply changing the two lamps. It draws 156 watts. The firm informed the Council that the apparatus is tested and approved by Underwriters' Laboratories for use with oxygen. The thermometer is graduated in both the Fahrenheit and the Centigrade scales. The crib is mounted on a four-legged stand bearing casters, and is 104 cm. (41 inches) high. The width and length of the crib are 40 and 81 cm. (15¾ and 32 in.) respectively. The whole weighs 30 Kg. (65 pounds); the shipping weight is 44 Kg. (98 pounds).

Armstrong X-4 Baby Incubator, Model 500

When tested under clinical conditions, the apparatus was reported by an investigator for the Council to be well constructed, safe, compact and easy to operate.

The Council on Physical Medicine voted to include the Armstrong X-4 Baby Incubator, Model 500, in its list of accepted devices.

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

AUSTIN SMITH, M.D., *Secretary.*

ASCORBIC ACID (See New and Nonofficial Remedies, 1947, p. 517.

The following dosage form has been accepted:

WARREN-TEED PRODUCTS COMPANY, COLUMBUS, OHIO

Tablets Ascorbic Acid: 25 mg., 50 mg. and 100 mg.

ESTROGENIC SUBSTANCES (WATER SOLUBLE) (See New and Nonofficial Remedies, 1947, p. 346).

The following dosage form has been accepted:

WYETH, INC., PHILADELPHIA

Tablets Conestron: 1.25 mg. and 0.625 mg.

U. S. Trademark Pending.

DIGITOXIN (See New and Nonofficial Remedies, 1947, p. 248).

The following dosage form has been accepted:

R. J. STRASENBURGH CO., ROCHESTER, N. Y.

Tablets Digitoxin: 0.1 mg. and 0.2 mg.

DIIODO-OXYQUINOLINE (See New and Nonofficial Remedies, 1947, p. 191).

The following additional dosage form has been accepted:

B. L. LEMKE & CO., NEW YORK, N. Y.

Tablets Yodoxin: 210 mg.

MEDICAL EDUCATION IN THE UNITED STATES AND CANADA

FORTY-EIGHTH ANNUAL REPORT ON MEDICAL EDUCATION IN THE UNITED STATES AND CANADA BY THE COUNCIL ON MEDICAL EDUCATION AND HOSPITALS OF THE AMERICAN MEDICAL ASSOCIATION

Donald G. Anderson, M.D., and Anne Tipner

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Introduction

This report is the forty-eighth annual compilation of information and statistics on medical education in the United States and Canada by the Council on Medical Education and Hospitals of the American Medical Association.

In addition to the presentation of the customary statistics concerning medical schools, students and graduates, several subjects of current interest are discussed. These include the deferment of medical and premedical students under the Selective Service Act, the financial support of medical schools, the forthcoming survey of medical education, clinical clerkships, the relative interest of medical students in general practice and the practice of a specialty, the objectives of premedical education and the factors which limit enrolments in existing medical schools. There is also presented a summary of the postgraduate and continuation courses that were offered in the United States during the past year.

In previous years the lists of hospitals approved for internships, residencies and fellowships were included in the Educational Number. This year these lists were published in the May 1, 1948 issue of THE JOURNAL. It was felt that the publication of a special Internship and Residency Number in the spring would provide information concerning approved hospitals at the time when it would be most helpful to those seeking appointments for the following year. Hospitals that have been approved for internship or residency training since the publication of the Internship and Residency Number are listed in this issue.

A number of examining boards in the medical specialties have revised their requirements since the 1947 Educational Number was published. A detailed summary of the requirements of the various American boards is therefore presented again this year.

The data published in the Educational Number are obtained from official reports. The Council and THE JOURNAL express their gratitude and appreciation to the officers of the medical schools, hospitals and other agencies whose cordial and continuing cooperation makes possible each year the compilation and presentation of this body of fundamental information concerning medical education in the United States and Canada.

Selective Service Act of 1948

Under the Selective Service Act of 1948, all men between the ages of 19 and 25 are liable for registration. Certain persons are exempt from service by reason of having served in one of the armed forces for stipulated periods during World War II. The law is rather liberal in its provisions for the deferment of persons who are necessary to the maintenance of the national health, safety or interest, provided that such deferment is based on the individual's status.

The National Headquarters of the Selective Service System has conferred with representatives of the medical schools and has attempted to arrive at a policy whereby a certain number of students in premedical and medical courses will be given consideration for deferment. These policies have not yet been announced. It is expected that they will be published shortly in a directive for the Selective Service System, although they may not be forthcoming until the local boards are completely established. It would appear that as far as medical students who already enrolled are concerned, there need be little concern relative to their deferment so long as they maintain a satisfactory standing in the respective medical schools.

The difficult problem arises with the premedical students. This gave much trouble during World War II and remains the problem of today. There are many colleges and universities in the United States that give premedical training. In these colleges are many men who at some time in their college career arrive at a decision to study medicine, following which they enroll in certain courses and become premedical students.

With the limited number of men between the ages of 19 and 25 who are liable for service, it is obvious that the deferment of all would-be premedical students will be impossible.

It is believed that a policy will be worked out whereby the responsibility for advising the local boards as to the identity of premedical students will be placed on the deans of the medical colleges of the United States. The deans will be required to accept tentatively for admission at a later date into the medical colleges premedical students who have attained their nineteenth birthday and who have had one year in college. The deans will be permitted to forward to the local boards sufficient certificates of tentative acceptance to insure the proper number of students in each freshman class. The number of certificates permitted a school will include a reasonable allowance for attrition. Acceptance by the medical college will not be final until the student has finished his premedical course in a manner satisfactory to the medical college. Once a medical school has tentatively accepted a student, it will be expected that the dean will keep himself informed of the student's academic standing in college over the remaining period of his premedical study, which may extend for one to three years, and that he will keep the student's local selective service board advised of his status.

The National Headquarters of the Selective Service System has made it clear that the responsibility for deferment rests by act of Congress on the local boards. Any certificate which a dean may issue and forward to a local board, through National Headquarters of Selective Service, will be a certificate of identity and will set forth the fact that the student is pursuing satisfactorily a premedical or medical course. Should the student fail to continue his course satisfactorily, the dean will be expected to issue a notice of immediate cancellation of the certificate to the local board to whom it is forwarded. Under those circumstances, the failing student would become promptly subject to classification in a class available for military service.

Medical School Calendars

This 1948 Educational Number presents data for the 1947-1948 academic year. During this year most schools followed conventional schedules with classes beginning in September or October and ending in May or June. The calendars of the schools that present irregular schedules are summarized in table 1.

Only one school, Mississippi, admitted more than one freshman class during this period. The freshman year in all schools except Utah began in either September or October. Utah admitted its freshman class in June. The second freshman class at Mississippi began in February. Tennessee admitted students quarterly.

Three schools in the United States, Louisville, Minnesota and Marquette, whose calendars remained somewhat irregular as a result of the wartime accelerated program, graduated two classes during the period covered by the report. In Canada, the University of Alberta discontinued the requirement of an internship for graduation. As a result of this change, Alberta graduated two classes in June 1948, one class on the completion of a year of internship training and the other class on completion of the four year medical school course.

Northwestern, University of Chicago, and Tennessee graduated students quarterly. Alabama and Queen's, which completed conversion from the accelerated program during the past year, had no graduating classes. In addition to the three schools with quarterly graduations and the three schools that graduated two classes, thirteen other medical schools in the United States, as shown in table 1, held graduations earlier than May or June.

The next graduation is scheduled by all but six schools for either May or June 1949. Northwestern, the University of Chicago and Tennessee will graduate students quarterly. Utah, which continues on an accelerated program although admitting only one freshman class a year, will graduate a class in August 1948 and another

TABLE 1.—*Admission and Graduation Calendars of Medical Schools with Irregular Schedules*

(Blank space indicates class is on regular schedule)

	Dates of Freshman Classes Included in This Educational Number	Dates of Next Two Entering Classes		Dates of Graduating Classes Included in This Educational Number	Dates of Next Two Graduating Classes	
		1948	1949		1949	1950
Medical College of **Alabama**	.....	.....	.....	None	6-7	Unannounced
University of **Georgia** School of Medicine	.....	.....	.....	3-22	6-30	June
Northwestern University Medical School (**Illinois**)	.....	.....	.....	Quarterly	Quarterly	Quarterly
Stritch School of Med. of Loyola University	.....	.....	.....	3-29	6-8	June
University of Chicago, The School of Medicine	.....	.....	.....	Quarterly	Quarterly	Quarterly
State University of **Iowa** College of Medicine	.....	.....	.....	3-13	6-10	6-9
University of Louisville (**Kentucky**)	.....	.....	.....	{ 9-20-47 { 6-15-48	6-14	June
University of **Minnesota** Medical School	.....	.....	.....	{ 8-29-47 { 6- 6-48	6-11	June
University of **Mississippi** School of Medicine *	{ 9-15-47 { 2- 2-48	9-20	1-31	.....	.....	.....
University of **Nebraska** College of Medicine	.....	.....	.....	3-20	6-6	June
Cornell University Medical College (**New York**)	.....	.....	.....	3-26	6-15	June
University of Rochester School of Medicine	.....	.....	.....	3-27	6-18	6-17
Bowman Gray School of Medicine (**North Carolina**)	.....	.....	.....	12-14-47	12-18-48	6-10
University of Cincinnati (**Ohio**)	.....	.....	.....	2-7	6-4	June
Ohio State University College of Medicine	.....	.....	.....	3-19	12-17-48	6-10-49
Hahnemann Medical College (**Pennsylvania**)	.....	.....	.....	3-18	6-16	6-15
University of Pennsylvania School of Medicine	.....	.....	.....	3-6	6-15	June
University of Pittsburgh School of Medicine	.....	.....	.....	4-9	6-8	6-7
University of **Tennessee** College of Medicine	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly	Quarterly
University of **Texas** School of Medicine	.....	.....	.....	2-13	6-11	6-10
University of **Utah** School of Medicine	6-16-47	6-14	June	8-24-47	Aug. 1948	June 1949
Marquette University School of Medicine (**Wisconsin**)	.....	.....	.....	{ 7-31-47 { 6-12-48	6-12	6-10
University of Alberta Faculty of Medicine (**Canada**)	.....	.....	.....	5-194†	April 8	April 7
Queen's University Faculty of Medicine	.....	.....	.....	None	June	June

* School of the Basic Medical Sciences.
† Two classes graduated because of discontinuation of internship requirement for graduation.

in June 1949. Bowman Gray, which is just completing deceleration, will graduate a class in December 1948 but none after that date until June 1950. Ohio State, which has continued to have one class on an accelerated program, will graduate that class in December 1948. It will graduate another class on the conventional schedule in June 1949.

The medical schools of the United States estimate that they will graduate a total of 5,157 students during the year July 1, 1948 to June 30, 1949. This class will probably be the smallest graduating class in several years. Its small size reflects the fact that when the class was admitted during 1945-1946, it was the smallest freshman class since 1940. This class was selected during the last year of the war, when there was no provision for the deferment of premedical students by Selective Service. During that period medical schools were unable to find a sufficient number of qualified students to fill the available places in their freshman classes. The decline in the number of graduates in 1948-1949 will be a temporary one. On the basis of present enrolments, it may be predicted that the graduating class in 1949-1950 will be larger than the one in 1948-1949.

Approved Medical Schools

The seventy medical schools in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association are shown in table 2; the nine Canadian schools in table 3, and the eight approved schools of the basic medical sciences in the United States and Canada in table 4. There have been no changes in these lists since the 1947 Educational Number.

The Hahnemann Medical College in Philadelphia is on probation, as are also the basic science schools of North Dakota and South Dakota.

On April 15, 1948, the Loyola University School of Medicine officially changed its name to the Stritch School of Medicine of Loyola University. The change of name was not accompanied by any change in the organization of the medical school itself or in the relationship of the school to Loyola University.

Tables 2, 3 and 4 list the quantitative premedical requirements effective next year for each school, the enrolment by classes for the academic year 1947-1948 and the total attendance exclusive of students in the required intern year. The number of graduates from July 1, 1947, to June 30, 1948, is also given for each school.

For the Canadian schools enrolments are also given for premedical students in the medical school as well as for students in a fifth medical year and the required intern year.

The name of the dean or executive officer is given for each school. Changes have been made in the executive officers of nine of the eighty-seven medical and basic science schools in the United States and Canada since the publication of the 1947 Educational Number. The following schools have appointed new executive officers: Arkansas, Iowa, Kansas, Creighton, Oklahoma, Pennsylvania, Marquette, Missouri and North Dakota.

Graduates

The last columns of tables 2 and 3 give the number of graduates from each medical school in the United States and Canada respectively from July 1, 1947 to June 30, 1948. During this period there were 5,543 graduates in the United States and 632 in Canada. As already mentioned, three schools in the United States graduated two classes during this period and one school, Alabama, had no graduating class. In Canada, Alberta graduated two classes, while Queen's had no graduates as a result of deceleration.

The total students and graduates in the United States per academic year since 1905 are reported in table 5. The 5,543 graduates reported for this year are the third largest number reported for any single academic year since 1910. The record 6,389 graduates reported for 1946-1947 included the students graduated during a thirteen month period in which ten schools graduated two classes.

During 1947-1948 no school had as many as 150 graduates. The schools with the largest number of graduates in a single class were Jefferson 148, Illinois 147, Northwestern 143 and Harvard 140. Seven schools graduated fewer than 50 students in one class: Woman's Medical 35, Utah 36, Albany 40, Vermont 40, Syracuse 41, Bowman Gray 48 and Emory 48.

In Canada the most graduates were at Toronto, 129, and the fewest at Alberta, 32, and Dalhousie, 34.

Of the total of 6,175 graduates in the United States and Canada during 1947-1948, 52.1 per cent possessed a baccalaureate degree. The number and percentage of graduates with a baccalaureate degree from each medical school are shown in table 6.

Enrolments 1947-1948

The enrolment figures for the academic year 1947-1948 for the individual schools are given in tables 2, 3 and 4. The total enrolments of classes in the medical and basic science schools in the United States and Canada are recapitulated in table 7. The total enrolment, excluding students taking a required intern year, in the seventy medical and seven basic science schools in the United States was 22,739. This enrolment is 30 less than the enrolment in the regular classes for 1946-1947, although it is 1,161 less than the total enrolment for that year if the extra classes that were in session as carryovers from the accelerated program are included. The enrolment of 22,739 students during 1947-1948, while below the peak enrolments reached during the period when the accelerated program was in force, is 1,212 greater than the average enrolment during the five year period, 1937-1941, immediately preceding the war. In evaluating the enrolments for 1947-1948 consideration must be given to the fact the junior class in 1947-1948 entered medical school during the academic year 1945-1946 as the smallest freshman class in the last seven years. As pointed out earlier in this report, at the time this class was selected, there was no provision for the deferment of premedical students by Selective Service. Medical schools in that year were unable to fill the available places in the freshman class with qualified students. Had this class been at full strength when admitted, the enrolment in the medical schools would now exceed 23,000.

The medical schools of the United States are at present admitting the maximum number of students that their facilities will permit without producing crowding and a resulting lowering of educational standards. Actually a number of schools are accepting more students than they can satisfactorily accommodate.

The medical schools have analyzed the problem that confronts them with respect to increasing their enrolments as follows: Thirty-seven schools state that they could not accept more students unless their facilities for instruction in both the preclinical and clinical departments could be expanded. Of the remaining

TABLE 2.—*Approved Medical Schools in the United States*

	Name and Location of School	1949 Premedical Requirement by Years	Students by Classes, 1947-1948						Graduates July 1, 1947 to June 30, 1948	Executive Officer	
			Freshman	Sophomore	Junior	Senior	Required Intern Year	Totals			
	ALABAMA										
1	Medical College of Alabama, Birmingham	3	52	48	32	0	..	132	4	Roy R. Kracke, M.D., Dean	1
	ARKANSAS										
2	University of Arkansas School of Medicine, Little Rock	3	91	74	54	55	..	274	55	Joseph T. Roberts, M.D., Dean	2
	CALIFORNIA										
3	University of California Medical School, Berkeley-San Francisco	3	72	72	71	68	..	283	68	Francis Scott Smyth, M.D., Dean	3
4	College of Medical Evangelists, Loma Linda-Los Angeles	3	79	81	74	85	88	319	87	Harold Shryock, M.D., Dean, Loma Linda; W. F. Norwood, Ph.D., Dean, Los Angeles	4
5	University of Southern California School of Medicine, Los Angeles	3	67	63	61	60	58	251	58	Burrell O. Raulston, M.D., Dean	5
6	Stanford University School of Medicine, Stanford University-San Francisco	3	63	59	60	60	57	242	57	Loren R. Chandler, M.D., Dean, San Francisco	6
	COLORADO										
7	University of Colorado School of Medicine, Denver	90 sem. hrs.*	60	62	59	52	..	233	52	Ward Darley, M.D., Dean	7
	CONNECTICUT										
8	Yale University School of Medicine, New Haven	3	60	55	49	58	..	222	55	C. N. Hugh Long, M.D., Dean	8
	DISTRICT OF COLUMBIA										
9	Georgetown University School of Medicine, Washington	Degree †	120	92	79	78	..	369	75	Paul A. McNally, S.J., Ph.D., Dean	9
10	George Washington University School of Medicine, Washington	3	88	77	70	80	..	315	80	Walter A. Bloedorn, M.D., Dean	10
11	Howard University College of Medicine, Washington	2	75	65	68	66	..	274	64	Joseph L. Johnson, M.D., Dean	11
	GEORGIA										
12	University of Georgia School of Medicine, Augusta	3	77	79	68	66	..	290	66	G. Lombard Kelly, M.D., Dean	13
13	Emory University School of Medicine, Emory University	3	65	59	38	48	..	210	48	R. Hugh Wood, M.D., Dean	12
	ILLINOIS										
14	Northwestern University Medical School, Chicago	85 sem. hrs.	127	124	136	133	143	529	143	J. Roscoe Miller, M.D., Dean	14
15	Stritch School of Medicine of Loyola University, Chicago	90 sem. hrs.	88	67	55	67	..	277	67	James J. Smith, M.D., Dean	15
16	University of Chicago, The School of Medicine	2	64	61	50	51	..	232	51	A. C. Bachmeyer, M.D., Assoc. Dean, Biology Div.; F. J. Mullin, Ph.D., Dean of Students	16
17	University of Illinois College of Medicine, Chicago	2	167	156	163	148	..	634	147	John B. Youmans, M.D., Dean	17
	INDIANA										
18	Indiana University School of Medicine, Bloomington-Indianapolis	3	130	101	80	85	..	396	84	John D. VanNuys, M.D., Dean, Indianapolis	18
	IOWA										
19	State University of Iowa College of Medicine, Iowa City	2	90	70	61	57	..	278	57	Mayo H. Soley, M.D., Dean	19
	KANSAS										
20	University of Kansas School of Medicine, Lawrence-Kansas City	2	84	85	83	56	..	308	56	Franklin D. Murphy, M.D., Dean, Kansas City	20
	KENTUCKY										
21	University of Louisville School of Medicine, Louisville	2	96	85	66	60	..	305	144‡	John Walker Moore, M.D., Dean	21
	LOUISIANA										
22	Louisiana State University School of Medicine, New Orleans	90 sem. hrs.	100	71	67	80	..	308	80	Vernon W. Lippard, M.D., Dean	22
23	Tulane University of Louisiana School of Medicine, New Orleans	2	143	120	115	99	..	477	97	Maxwell E. Lapham, M.D., Dean	23
	MARYLAND										
24	Johns Hopkins University School of Medicine, Baltimore	Degree	78	73	72	79	..	297	78	Alan M. Chesney, M.D., Dean	24
25	University of Maryland School of Medicine and College of Phys. and Surg., Baltimore	2	96	79	69	78	..	322	77	H. Boyd Wylie, M.D., Dean	25
	MASSACHUSETTS										
26	Boston University School of Medicine, Boston	2	70	56	54	55	..	235	54	James M. Faulkner, M.D., Dean	26
27	Harvard Medical School, Boston	2	111	109	144	140	..	504	140	C. Sidney Burwell, M.D., Dean	27
28	Tufts College Medical School, Boston	4 and degree	112	98	86	98	..	394	94	Dwight O'Hara, M.D., Dean	28
	MICHIGAN										
29	University of Michigan Medical School, Ann Arbor	2	120	105	109	132	..	476	132	Albert C. Furstenberg, M.D., Dean	29
30	Wayne University College of Medicine, Detroit	4	68	69	57	61	..	256	60	Hardy A. Kemp, M.D., Dean	30
	MINNESOTA										
31	University of Minnesota Medical School, Minneapolis	2	122	101	92	75	101	391	140‡	Harold S. Diehl, M.D., Dean	31
	MISSOURI										
32	St. Louis University School of Medicine, St. Louis	2	115	106	91	120	..	432	120	Alphonse M. Schwitalla, S.J., Ph.D., Dean	32
33	Washington University School of Medicine, St. Louis	2	96	82	101	91	..	369	90	Robert A. Moore, M.D., Dean	33

	NEBRASKA										
34	Creighton University School of Medicine, Omaha	3	75	62	42	65	..	244	65	Percy J. Carroll, M.D., Dean	34
35	University of Nebraska College of Medicine, Omaha	3	99	78	59	67	..	303	67	Harold C. Lueth, M.D., Dean	35
	NEW YORK										
36	Albany Medical College, Albany	3	48	51	42	41	..	182	40	R. S. Cunningham, M.D., Dean	36
37	Long Island College of Medicine, Brooklyn	3	113	98	101	92	..	404	92	Jean A. Curran, M.D., President; Duncan W. Clark, M.D., Dean	37
38	University of Buffalo School of Medicine, Buffalo	3	71	71	56	75	..	273	74	Stockton Kimball, M.D., Dean	38
39	Columbia University College of Physicians and Surgeons, New York	3	114	100	110	102	..	426	100	Willard C. Rappleye, M.D., Dean	39
40	Cornell University Medical College, New York	3	85	79	73	78	..	315	78	Joseph C. Hinsey, Ph.D., Dean	40
41	New York Medical College, Flower and Fifth Avenue Hospitals, New York	3	124	107	96	110	..	436	110	J. A. W. Hetrick, M.D., President and Dean	41
42	New York University College of Medicine, New York	3	127	115	113	132	..	487	132	Currier McEwen, M.D., Dean	42
43	University of Rochester School of Medicine and Dentistry, Rochester	3	68	65	68	66	..	267	66	George H. Whipple, M.D., Dean	43
44	Syracuse University College of Medicine, Syracuse	3	56	46	46	42	..	190	41	H. G. Weiskotten, M.D., Dean	44
	NORTH CAROLINA										
45	Duke University School of Medicine, Durham	3	73	69	62	66	..	270	66	Wilburt C. Davison, M.D., Dean	45
46	Bowman Gray School of Medicine of Wake Forest College, Winston-Salem	3	54	41	40	49	..	184	48	C. C. Carpenter, M.D., Dean	46
	OHIO										
47	University of Cincinnati College of Medicine, Cincinnati	3	87	77	81	76	..	321	76	Stanley Dorst, M.D., Dean	47
48	Western Reserve University School of Medicine, Cleveland	3	78	79	78	77	..	312	77	Joseph T. Wearn, M.D., Dean	48
49	Ohio State University College of Medicine, Columbus	3	85	75	85	72	..	317	72	Charles A. Doan, M.D., Dean	49
	OKLAHOMA										
50	University of Oklahoma School of Medicine, Oklahoma City	3	60	75	56	62	..	253	62	Mark R. Everett, Ph.D., Dean	50
	OREGON										
51	University of Oregon Medical School, Portland	3	78	65	59	68	..	270	65	D. W. E. Baird, M.D., Dean	51
	PENNSYLVANIA										
52	*Hahnemann Medical College and Hospital of Philadelphia	3	105	88	98	114	..	405	112	Charles L. Brown, M.D., Dean	52
53	Jefferson Medical College of Philadelphia	3	166	152	151	152	..	621	148	William H. Perkins, M.D., Dean	53
54	Temple University School of Medicine, Philadelphia	3	133	103	99	124	..	459	124	William N. Parkinson, M.D., Dean	54
55	University of Pennsylvania School of Medicine, Philadelphia	3	119	106	125	129	..	479	127	John McK. Mitchell, M.D., Dean	55
56	Women's Medical College of Pennsylvania, Philadelphia	3	50	42	31	35	..	158	35	Marion Fay, Ph.D., Dean	56
57	University of Pittsburgh School of Medicine, Pittsburgh	2	86	73	69	75	..	303	73	William S. McElroy, M.D., Dean	57
	SOUTH CAROLINA										
58	Medical College of the State of South Carolina, Charleston	3	60	57	42	53	..	212	53	Kenneth M. Lynch, M.D., Dean	58
	TENNESSEE										
59	University of Tennessee College of Medicine, Memphis	2	157	140	115	99	..	511	99	O. W. Hyman, Ph.D., Dean	59
60	Meharry Medical College, Nashville	2	67	65	44	58	..	234	58	Murray C. Brown, M.D., Director of Medical Education; Michael J. Bent, M.D., Dean	60
61	Vanderbilt University School of Medicine, Nashville	Degree	53	49	51	54	..	207	54	Ernest W. Goodpasture, M.D., Dean	61
	TEXAS										
62	Southwestern Medical College, Dallas	3	61	54	58	51	..	224	50	W. Lee Hart, M.D., Dean	62
63	University of Texas School of Medicine, Galveston	3	108	90	69	80	..	347	80	Chauncey D. Leake, Ph.D., Vice President; D. Bailey Calvin, Ph.D., Dean of Student and Curricular Affairs	63
64	Baylor University College of Medicine, Houston	3	92	72	65	64	..	293	64	W. H. Moursund, M.D., Dean	64
	UTAH										
65	University of Utah School of Medicine, Salt Lake City	3	50	51	40	37	..	178	36	Richard H. Young, M.D., Dean	65
	VERMONT										
66	University of Vermont College of Medicine, Burlington	3	41	35	35	42	..	153	40	William Eustis Brown, M.D., Dean	66
	VIRGINIA										
67	University of Virginia Department of Medicine, Charlottesville	2	72	59	59	60	..	250	59	Harvey E. Jordan, Ph.D., Dean	67
68	Medical College of Virginia, Richmond	3	84	77	71	82	..	314	83	Harvey B. Haag, M.D., Dean	68
	WISCONSIN										
69	University of Wisconsin Medical School, Madison	3	76	83	69	50	..	278	50	William S. Middleton, M.D., Dean	69
70	Marquette University School of Medicine, Milwaukee	3	100	93	75	82	..	350	102‡	John S. Hirschboeck, M.D., Dean	70
	Totals		6,213	5,341	5,154	5,340	447#	22,248	5,343		

* On probation.
† 90 semester hours for veterans.
‡ Figures are for two graduating classes and include senior students reported in 1947 Educational Number.
# Intern enrolment not included in total column.
§ No seniors or graduates due to deceleration.

thirty-three schools, twenty-nine would have to enlarge their facilities for instruction in the preclinical departments, and four their facilities for clinical instruction.

It should be understood that the expansion of a medical school involves much more than merely securing the use of a certain number of additional square feet of floor space for classrooms. Expansion also pose a serious problem for schools located in the congested areas of big cities.

The problem of increasing enrolments is further complicated by the shortage of competent teachers that exists as a result of the failure during the war to allow young men to prepare themselves for careers in teaching and research. The effects of this policy will

TABLE 3.—*Approved Medical Schools in Canada*

Name and Location of School	1949 Premedical Requirement by Years	Students by Classes, 1947-1948: First Premedical Year	Second Premedical Year	Freshman	Sophomore	Junior	Senior	Additional Year	Required Intern Year	Totals	Graduates July 1, 1947 to June 30, 1948	Executive Officer	
ALBERTA													
1 University of Alberta Faculty of Medicine, Edmonton	3	..	..	50	42	35	44	..	22	171	76*	John W. Scott, M.D., Dean	1
MANITOBA													
2 University of Manitoba Faculty of Medicine, Winnipeg	3	..	..	90	66	64	60	..	60	280	62	A. T. Mathers, M.D., Dean	2
NOVA SCOTIA													
3 Dalhousie University Faculty of Medicine, Halifax	2	..	..	58	56	48	42	..	35	204	34	H. G. Grant, M.D., Dean	3
ONTARIO													
4 Queen's University Faculty of Medicine, Kingston	1	66	..	53	52	52	47	..	..	270	68	G. Spencer Melvin, M.D., Dean	4
5 University of Western Ontario Faculty of Medicine, London	2	..	..	60	93	54	40	..	..	247	40	J. B. Collip, M.D., Dean	5
6 University of Toronto Faculty of Medicine, Toronto	2	150	182	162	162	159	130	..	..	945	129	J. A. MacFarlane, M.B., Dean	6
QUEBEC													
7 McGill University Faculty of Medicine, Montreal	4	..	..	115	107	133	122	..	..	477	119	Frederick Smith, M.D., Dean	7
8 University of Montreal Faculty of Medicine, Montreal	2	..	..	129	94	83	85	..	100	382	100	Edmond Dubé, M.D., Dean	8
9 Laval University Faculty of Medicine, Quebec	Degree	..	..	87	147	128	105	84	..	551	72	Charles Vézina, M.D., Dean	9
Totals	..	216	182	795	819	756	675	84	230	3,527	632		

* Represents two graduating classes.
† Intern enrolment not included in total column.
‡ No graduates due to deceleration.

TABLE 4.—*Approved Schools of the Basic Medical Sciences in the United States and Canada*

Name and Location of School	1949 Premedical Requirement by Years	Students by Classes, 1947-1948: Freshman	Sophomore	Total	Executive Officer	
MISSISSIPPI						
1 University of Mississippi School of Medicine, University	90 sem. hrs.	a { 38 / 33	b { 21 / 30	112	David S. Pankratz, M.D., Dean	1
MISSOURI						
2 University of Missouri School of Medicine, Columbia	3	43	30	73	Trawick H. Stubbs, M.D., Dean	2
NEW HAMPSHIRE						
3 Dartmouth Medical School, Hanover	3	25	23	48	Rolf C. Syvertsen, M.D., Dean	3
NORTH CAROLINA						
4 University of North Carolina School of Medicine, Chapel Hill	3	56	44	100	W. Reece Berryhill, M.D., Dean	4
NORTH DAKOTA						
5 University of North Dakota School of Medicine, Grand Forks *	3	30	21	51	W. F. Potter, M.D., Dean	5
SOUTH DAKOTA						
6 University of South Dakota School of Medical Sciences, Vermillion *	3	30	24	54	Donald Slaughter, M.D., Dean	6
WEST VIRGINIA						
7 West Virginia University School of Medicine, Morgantown	2	31	24	55	Edward J. Van Liere, M.D., Dean	7
CANADA						
8 University of Saskatchewan School of Medical Sciences, Saskatoon	2	32	23	55	W. S. Lindsay, M.B., Dean	8
Totals		306	240	546		

* On probation.
a. Beginning date of second freshman class Feb. 2, 1948.
b. Beginning date of second sophomore class Nov. 3, 1947.

includes additional space in laboratories and hospitals and increases in equipment and teaching personnel. For the expanded instructional staff, in turn, additional office and laboratory space and technical personnel must be provided. A significant increase in enrolments in most schools would also necessitate enlargement of the administrative offices, library and animal quarters and an increase in the staffs of these departments. Any additional facilities that might be created would have to be satisfactorily integrated from a physical standpoint with existing facilities. This requirement would handicap the medical schools in their efforts to expand their teaching staffs for several years to come. Consideration must also be given to the fact that for a number of schools the size and location of the community in which the school is situated would make it unlikely that sufficient additional clinical facilities could be developed to permit the training of more students.

In the section of this report on the financial support of medical schools, figures are presented which show that to conduct their present programs, the medical schools must secure from other sources three times

the sum they collect in tuition from students. Therefore, unlike certain other types of training in which the additional tuition collected would offset or more than offset the cost of an expanded program, the expansion of a medical school, if satisfactory standards are maintained, would require a substantial outlay of funds by the medical school.

The situation with respect to increasing enrolments in existing medical schools in the United States may be summarized by stating that no medical school could undertake to increase its entering class beyond present figures without making substantial alterations and additions to its physical plant and without securing additional financial support to meet the increased operating deficit that would result from the expanded program. For certain schools, the lack of available or potential clinical facilities in the community would make expansion under any circumstances impossible. Finally, it should be recognized that in some schools enrolments already approach the maximum compatible with the efficient conduct of a satisfactory program.

TABLE 5.—*Schools, Students and Graduates in the United States, 1905-1948*

Students in the required intern year are not included

	Schools	Students *	Graduates
1905	160	26,147	5,606
1910	131	21,526	4,440
1915	96	14,801	3,536
1920	85	13,708	3,047
1921	83	14,466	3,186
1922	81	15,635	2,529
1923	80	16,920	3,120
1924	79	17,728	3,562
1925	80	18,260	3,974
1926	79	18,840	3,992
1927	80	19,662	4,035
1928	80	20,545	4,392
1929	76	20,878	4,446
1930	76	21,597	4,565
1931	76	21,982	4,735
1932	76	22,125	4,936
1933	77	22,466	4,895
1934	77	22,700	5,055
1935	77	22,888	5,101
1936	77	22,564	5,183
1937	77	22,665	5,377
1938	77	21,587	5,194
1939	77	21,302	5,089
1940	77	21,271	5,097
1941	77	21,379	5,275
1942	77	22,051	5,163
1943	76	22,631	5,221
1944	77	23,529	5,134
1944 (second session)	77	24,026	5,169
1945 (to June 30)	77	24,028	5,136
1946 (to May 21)	77	23,716	5,876
1947 (to June 30)†	77	23,960	6,389
1948 (to June 30)	77	22,739	5,543

* Includes figures for schools of the basic medical sciences.
† Includes figures for additional classes.

The total enrolment in the Canadian schools, including one basic science school, was 3,100, which is 118 greater than in the preceding session. There were 398 premedical and 84 fifth (not intern) year students in the Canadian schools. These figures are included in the "total" column of table 3, but not in the "total" column of table 7.

There were 447 students in the required intern year in the United States and 230 in Canada. The total number of students in the United States taking a required intern year is shown in table 16 for each of the academic years since 1930-1931.

Five medical schools in the United States had more than 500 students, excluding those in the intern year. Illinois with 634 students had the largest enrolment. Jefferson had 621, Northwestern 520, Tennessee 511 and Harvard 504.

Seven schools in this country had enrolments under 200. Alabama had 132 students, Vermont 153, Woman's Medical 158, Albany 182, Bowman Gray 184 and Syracuse 190.

In Canada, Toronto with 613 students had the largest enrolment. This number does not include 332 students in the premedical years. The smallest enrolment in Canada was at Alberta, with 171 students.

The total enrolment in the schools of the basic medical sciences in this country was 491. Mississippi with 112 students and North Carolina with 100 had the largest enrolments.

TABLE 6.—*Graduates with Baccalaureate Degrees in Medical Schools in the United States and Canada, July 1, 1947 to June 30, 1948*

	Graduates	Degrees	Per Cent with Degrees
Medical College of **Alabama**	0	0	0
University of **Arkansas**	55	25	45.5
University of **California**	68	48	70.6
College of Medical Evangelists	87	55	63.2
University of Southern California	58	34	58.7
Stanford University	57	57	100.0
University of **Colorado**	32	32	61.5
Yale University, **(Connecticut)**	55	20	36.4
Georgetown University, **(D. C.)**	75	19	25.3
George Washington University	80	49	61.3
Howard University	64	12	18.8
Emory University, **(Georgia)**	48	7	14.6
University of Georgia	66	20	30.3
Stritch School of Medicine, **(Illinois)**	67	12	17.9
Northwestern University	143	89	62.2
University of Chicago	51	44	86.3
University of Illinois	147	136	92.5
Indiana University	84	40	47.6
State University of **Iowa**	57	6	10.5
University of **Kansas**	56	40	71.4
University of Louisville, **(Kentucky)**	144*	37	25.7
Louisiana State University	80	25	31.3
Tulane University of Louisiana	87	21	24.1
Johns Hopkins University, **(Maryland)**	78	43	55.1
University of Maryland	77	50	64.9
Boston University, **(Massachusetts)**	54	24	44.4
Harvard Medical School	140	57	40.7
Tufts College Medical School	94	50	31.9
University of **Michigan**	132	96	72.7
Wayne University	60	37	61.7
University of **Minnesota**	140*	140	100.0
St. Louis University, **(Missouri)**	120	47	39.2
Washington University	90	37	41.1
Creighton University, **(Nebraska)**	65	42	64.6
University of Nebraska	67	46	68.7
Albany Medical College, **(New York)**	40	21	52.5
Long Island College of Medicine	92	40	43.5
University of Buffalo	74	28	37.8
Columbia University	100	73	73.0
Cornell University	78	48	61.5
New York Medical College	119	59	49.6
New York University	132	68	51.5
University of Rochester	66	32	48.5
Syracuse University	41	15	36.6
Duke University, **(North Carolina)**	66	24	36.4
Bowman Gray School of Medicine	48	10	20.8
University of Cincinnati, **(Ohio)**	76	50	39.5
Western Reserve University	77	50	64.9
Ohio State University	72	52	72.2
University of **Oklahoma**	62	21	33.8
University of **Oregon**	65	64	98.5
Hahnemann Med. College, **(Pennsylvania)**	112	54	48.2
Jefferson Medical College	148	67	45.3
Temple University	104	77	62.1
University of Pennsylvania	127	44	34.7
Woman's Medical College	35	33	94.3
University of Pittsburgh	75	66	88.0
Medical College of **South Carolina**	53	33	62.3
University of **Tennessee**	99	72	72.7
Meharry Medical College	58	35	60.3
Vanderbilt University	54	44	81.5
Southwestern Medical College, **(Texas)**	50	17	34.0
Baylor University	64	14	21.9
University of **Texas**	80	16	20.0
University of **Utah**	36	35	97.2
University of **Vermont**	40	31	77.5
University of **Virginia**	59	32	54.2
Medical College of **Virginia**	85	58	68.2
University of **Wisconsin**	59	59	100.0
Marquette University	169*	33	19.5
University of Alberta, **(Canada)**	70*	69	98.5
University of Manitoba	62	39	62.5
Dalhousie University	34	10	29.4
Queen's University	0	0	0
University of Western Ontario	40	8	20.0
University of Toronto	129	16	12.4
McGill University	119	92	77.3
University of Montreal	100	100	100.0
Laval University	72	72	100.0
Totals	6,175	3,279	53.1

* Includes two classes.

In table 8, enrolments in the various classes in the medical and basic science schools in the United States are given for each academic session since 1930-1931. During the 1947-1948 session there were 77 fewer freshmen, 183 more sophomores, 613 fewer juniors and 654 fewer seniors than were reported in 1946-1947. It should be pointed out again that the statistics for 1946-1947 included figures for fifteen additional classes in six schools. A more accurate comparison can be made if these additional classes are not included. Such a comparison shows that there were 230 more freshmen, 451 more sophomores, 383 fewer juniors and 328 fewer seniors in 1947-1948 than in the preceding session.

It should be noted that prior to 1942-1943 the totals shown in table 6 are somewhat higher than the sum of the figures for the various classes in a given year. The discrepancy resulted from the inability of certain schools to classify strictly their students into the conventional graded classes.

TABLE 7.—*Total Enrolments by Classes in Medical Schools of the United States and Canada for the 1947-1948 Session*

Students in the required intern year are not included

	Freshmen	Sophomores	Juniors	Seniors	Total	Total Preceding Session
70 Medical Schools (U. S.)	6,213	5,541	5,154	5,349	22,248	23,471
7 Basic Science Schools (U. S.)	274	217	.....	.....	491	479
Totals (U. S.)	6,487	5,758	5,154	5,349	22,739	23,950
9 Medical Schools (Canada)	705	519	726	675	3,045*	3,2021
1 Basic Science School (Canada)	22	23	.....	.....	45	89
Totals (Canada)	827	542	726	675	3,190*	3,2911
Grand totals (U. S. and Canada)	7,314	6,000	5,910	6,018	25,929	26,892

* Does not include 356 premedical and 34 fifth year students.
† Does not include 339 premedical and 34 fifth year students.

TABLE 8.—*Students in the Medical and Basic Science Schools in the United States, 1931-1948*

Students in the required intern year are not included

	Freshman	Sophomore	Junior	Senior	Total
1930-1931	6,458	5,585	5,089	4,866	21,998
1931-1932	6,300	5,403	4,993	4,885	22,126
1932-1933	6,428	5,479	5,017	4,948	22,402
1933-1934	6,457	5,571	4,985	4,987	22,700
1934-1935	6,356	5,624	5,142	4,985	22,907
1935-1936	6,005	5,458	5,220	5,059	22,344
1936-1937	5,910	5,309	5,149	5,138	21,506
1937-1938	5,781	5,253	4,990	5,053	21,077
1938-1939	5,794	5,169	4,947	4,981	21,291
1939-1940	5,794	5,177	4,971	4,894	21,371
1940-1941	5,837	5,254	4,969	4,849	21,379
1941-1942	6,218	5,403	5,027	4,943	22,591
1942-1943	6,425	5,839	5,175	5,169	22,608
1943-1944	6,561	6,071	5,649	5,257	23,539
1944 (second session)	6,648	6,149	6,084	5,794	24,675
1944-1945	6,502	6,979	5,709	6,028	24,218
1945-1946	6,660	6,759	6,751	6,050	26,210
1946-1947*	6,564	6,575	5,767	5,984	25,090
1947-1948	6,487	6,758	5,154	5,349	22,739

* Includes additional classes.

Veterans comprised 73.4 per cent of the freshman class as compared to 62.8 per cent the preceding year. The percentage of veterans for other classes were sophomores 64.8 per cent, juniors 53.6 per cent and seniors 48.6 per cent.

TABLE 9.—*Enrolment by Classes of Veterans and Non-Veterans in the Medical and Basic Science Schools in the United States, 1947-1948*

	Men Veterans	Other Men	Total Men	Women Veterans	Other Women	Total Women	Total Men and Women
Freshmen	4,712	1,561	6,273	15	479	514	6,487
Sophomores	3,701	1,469	5,167	21	570	591	5,758
Juniors	2,764	1,743	4,507	7	621	628	5,154
Seniors	1,599	2,289	4,004	3	286	289	5,349
Totals	12,776	6,513	19,289	76	2,004	2,180	22,739

Distributions of Students by Sex

In table 10 the students enrolled in all the medical and basic science schools in the United States and Canada during the academic year 1947-1948 are classified according to sex. Graduates of the medical schools during the period July 1, 1947 to June 30, 1948 are also classified according to sex in the same table.

Table 11 shows the numbers and percentages of women medical students and graduates in the United States since 1905. In 1947-1948 women totaled 2,159 or 9.5 per cent of the medical students in this country. While the total is 24 less than for the preceding year, the percentage of women increased by 0.4 per cent and represents the highest percentage of women medical students ever recorded in the United States. The percentage of women in the freshman class decreased from 11.1 per cent in the preceding year to 7.9 per cent. The actual number declined from 708 to 514.

Four schools had no women medical students: St. Louis, Dartmouth, Jefferson and North Dakota. Georgetown admitted women students for the first time during 1947-1948. St. Louis has reported that it will admit women beginning with the academic year 1948-1949. One school, the Woman's Medical College, had no men students.

During the past four years the number of medical schools in addition to the Woman's Medical College enrolling more than 30 women has increased from seven to twenty-four. From figures presently available it is estimated that about 7 per cent of the entering class in 1948 will be women.

In Canada women numbered 262, or 7.8 per cent of the total enrolment.

Veterans in Medical Schools

The percentage of veterans enrolled in the medical schools and schools of the basic medical sciences in the United States increased from 55.6 per cent in the preceding year to 60.9 per cent in 1947-1948. Of the 22,739 students, 13,837 were veterans. Seventy-five of the veterans were women. In table 9 the composition of the student body of the medical schools and schools of the basic medical sciences in this country is recapitulated by classes.

Geographic Source of Freshman Students, 1947-1948

The residence of students in the 1947-1948 freshman class of each medical and basic science school in the United States and Canada is shown in table 12. It is recognized that the residence of certain students may be of brief duration, so that their real geographic source may not be revealed by their residence on entering medical school. On the other hand, the birth place of students is probably no better a criterion of geographic origin, since appreciable numbers of people have permanent residence elsewhere than in the states of their birth.

Table 12 reports the residence of 828 freshman students in Canadian schools. This figure differs somewhat from the freshman enrolment figures given in other tables because table 12 employs the figure for the

first class of premedical students at Queen's and Toronto, since these students are already registered in those schools.

In table 13 is shown the number of first year medical students from each state per hundred thousand inhabitants. For the nation as a whole there were 4.3 freshman medical students per hundred thousand inhabitants. The twelve states without medical or basic science schools had an average of 3.3 first year students per hundred thousand of population. Those states with medical or basic science schools had an average of 4.9 students per hundred thousand of population enrolled as freshmen. This is the second successive year in which states with medical schools have sent a significantly larger proportion of their population to medical schools than those states without medical schools. Prior to 1946-1947, statistics showed that states with and states without medical schools sent almost identical proportions of their populations to medical schools.

In 1946-1947 it was reported that 14.8 per cent of the freshman students admitted by state and municipal schools were nonresidents. During the current year only 9.8 per cent of the freshmen enrolled in these schools were out of state students. In the private schools 51.3 per cent of the freshmen in 1947-1948 were nonresidents, which is almost identical with the figure 51.4 per cent for 1946-1947.

There are indications that several of the states without medical schools are becoming concerned that their residents are not gaining admission to medical schools in the same proportion as those of other states. In certain states the solution to the problem may lie in the development of a medical school within the state. Several of the states in question, however, are not in a position to establish and maintain acceptable medical schools. For these states the solution may lie in their entering into an arrangement with an existing medical school under the terms of which the state will contribute to the support of the medical school if the school will agree to accept a certain number of qualified students each year from that state. Such a program of regional support is not entirely new, but it is being studied with increasing interest by a number of states. It would appear to be the most logical plan for meeting the needs of those states which do not have the resources or clinical facilities necessary for developing satisfactory medical schools of their own.

TABLE 10.—*Distribution of Students and Graduates by Sex in the United States and Canada, 1947-1948*

	Students		Graduates	
	Men	Women	Men	Women
Medical College of Alabama	118	14	0	0
University of Arkansas	203	11	32	3
University of California	244	30	58	10
College of Medical Evangelists	285	34	83	4
University of Southern California	230	13	55	2
Stanford University	214	28	53	4
University of Colorado	209	24	49	3
Yale University, (Connecticut)	194	28	47	8
Georgetown University, (D. C.)	262	7	75	0
George Washington University	281	34	75	5
Howard University	234	40	61	3
Emory University, (Georgia)	196	14	42	6
University of Georgia	270	11	63	3
Stritch School of Medicine, (Illinois)	257	29	63	4
Northwestern University	499	21	137	6
University of Chicago	203	29	48	3
University of Illinois	553	81	130	17
Indiana University	308	28	76	6
State University of Iowa	251	27	55	2
University of Kansas	283	35	51	5
University of Louisville, (Kentucky)	309	16	137	7
Louisiana State University	274	34	71	9
Tulane University of Louisiana	437	49	92	5
Johns Hopkins University, (Maryland)	258	39	71	7
University of Maryland	295	27	72	5
Boston University, (Massachusetts)	212	23	51	3
Harvard Medical School	483	22	149	0
Tufts College Medical School	351	45	87	7
University of Michigan	412	64	111	21
Wayne University	219	7	59	1
University of Minnesota	332	20	128	12
University of Mississippi	105	7	..	..
University of Missouri	66	7	..	..
St. Louis University	432	0	120	0
Washington University	325	37	83	7
Creighton University, (Nebraska)	220	15	63	2
University of Nebraska	277	16	64	3
Dartmouth Med. School, (New Hampshire)	46	0	..	..
Albany Medical College, (New York)	155	27	32	8
Long Island College of Medicine	355	49	88	4
University of Buffalo	240	24	71	3
Columbia University	372	60	90	10
Cornell University	278	37	72	6
New York Medical College	280	66	108	11
New York University	416	60	121	11
University of Rochester	237	30	59	7
Syracuse University	160	30	39	2
University of North Carolina	99	11	..	..
Duke University	232	18	64	2
Bowman Gray School of Medicine	171	13	47	1
University of North Dakota	51	0	..	..
University of Cincinnati, (Ohio)	266	28	73	3
Western Reserve University	283	29	73	4
Ohio State University	265	32	68	4
University of Oklahoma	234	25	59	3
University of Oregon	247	23	60	5
Hahnemann Med. College, (Pennsylvania)	365	40	108	4
Jefferson Medical College	621	0	148	0
Temple University	409	50	114	10
University of Pennsylvania	435	44	118	9
Woman's Medical College	0	156	0	35
University of Pittsburgh	284	19	72	3
Medical College of South Carolina	202	10	53	0
University of South Dakota	52	2	..	..
University of Tennessee	486	25	66	3
Meharry Medical College	205	20	52	6
Vanderbilt University	191	22	52	2
Southwestern Medical College, (Texas)	202	22	48	2
University of Texas	312	35	73	7
Baylor University	274	19	62	2
University of Utah	167	11	36	0
University of Vermont	131	22	37	3
University of Virginia	229	11	54	5
Medical College of Virginia	283	31	77	8
West Virginia University	48	7	..	..
University of Wisconsin	227	51	51	8
Marquette University	318	32	132	17
University of Alberta, (Canada)	156	15	49	7
University of Manitoba	253	27	59	3
Dalhousie University	197	7	54	0
Queen's University *	192	12	0	0
University of Western Ontario	228	19	56	4
University of Toronto *	525	86	114	15
McGill University	444	83	109	10
University of Montreal	362	99	94	6
Laval University †	460	7	68	4
University of Saskatchewan	50	5	..	..
Totals	21,447	2,309	5,734	441

* Excludes 66 and 332 premedical students respectively.
† Excludes 84 fifth year students.

TABLE 11.—*Women in Medicine in the United States*

Year	Women Students	Percentage of All Students	Women Graduates	Percentage of All Graduates
1905	1,673	4.1	219	4.0
1910	967	4.0	116	2.6
1915	502	4.0	92	2.6
1920	818	5.8	122	4.0
1925	910	5.0	204	5.1
1926	905	5.0	212	5.4
1927	904	4.9	180	4.7
1928	909	4.5	207	4.9
1929	925	4.4	214	4.8
1930	935	4.4	204	4.5
1931	960	4.5	217	4.6
1932	955	4.3	208	4.2
1933	1,056	4.7	214	4.4
1934	1,080	4.8	211	4.2
1935	1,077	4.7	207	4.1
1936	1,135	5.0	246	4.7
1937	1,113	5.1	238	4.4
1938	1,161	5.4	237	4.6
1939	1,144	5.4	260	5.1
1940	1,145	5.4	253	5.0
1941	1,116	5.4	280	5.3
1942	1,164	5.3	279	5.4
1943	1,159	5.1	241	4.6
1944	1,176	5.0	230	4.7
1944 (Second session)	1,141	4.6	236	4.9
1945 (to June 30)	1,332	5.6	262	5.1
1946 (to May 31)	1,868	8.0	242	4.2
1947 (to June 30)*	2,183	9.1	342	5.4
1948 (to June 30)	2,159	9.5	399	7.1

* Includes additional classes.

TABLE 12.—*Residence of Freshman Medical Students*

Marginal Number		1 Alabama	2 Arizona	3 Arkansas	4 California	5 Colorado	6 Connecticut	7 Delaware	8 District of Columbia	9 Florida	10 Georgia	11 Idaho	12 Illinois	13 Indiana	14 Iowa	15 Kansas	Marginal Number
1	Medical College of Alabama	52	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1
2	University of Arkansas School of Medicine	..	..	90	..	..	..	..	..	..	..	..	..	..	..	..	2
3	University of California Medical School	..	..	1	68	..	..	..	..	..	..	..	..	..	..	..	3
4	College of Medical Evangelists	2	..	1	13	5	1	..	1	1	1	1	..	2	1	..	4
5	University of Southern California School of Medicine	..	3	..	50	..	..	..	..	..	..	..	..	..	..	..	5
6	Stanford University School of Medicine	..	1	..	51	1	*1	..	..	..	..	1	..	..	..	..	6
7	University of Colorado School of Medicine	..	..	..	..	58	..	..	..	..	..	..	..	..	..	..	7
8	Yale University School of Medicine	..	..	..	2	..	10	..	..	..	..	..	1	4	3	..	8
9	Georgetown University School of Medicine	..	..	..	5	..	6	..	6	..	..	..	1	..	..	..	9
10	George Washington University School of Medicine	2	1	..	6	..	1	..	25	1	..	1	..	..	..	..	10
11	Howard University College of Medicine	2	..	..	..	..	..	..	4	1	..	..	2	..	..	..	11
12	Emory University School of Medicine	3	..	..	..	..	..	..	..	14	30	..	1	..	..	..	12
13	University of Georgia School of Medicine	..	..	..	..	..	..	..	..	..	77	..	..	..	..	..	13
14	Stritch School of Medicine of Loyola University	..	..	..	2	..	..	..	..	1	..	..	48	5	..	..	14
15	Northwestern University Medical School	1	1	..	7	1	..	..	..	..	..	2	50	8	8	3	15
16	University of Chicago, The School of Medicine	..	1	1	3	..	1	..	..	..	..	1	22	..	1	2	16
17	University of Illinois College of Medicine	..	1	..	1	..	1	..	..	..	..	..	151	..	1	..	17
18	Indiana University School of Medicine	..	..	..	..	..	..	..	..	1	..	..	1	125	..	..	18
19	State University of Iowa College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	88	..	19
20	University of Kansas School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76	20
21	University of Louisville School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	7	..	..	21
22	Louisiana State University School of Medicine	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	22
23	Tulane University of Louisiana School of Medicine	10	..	2	5	..	..	..	..	14	3	..	1	1	..	..	23
24	Johns Hopkins University School of Medicine	..	..	..	4	..	..	..	..	1	..	1	..	..	..	..	24
25	University of Maryland School of Medicine	..	..	..	2	1	..	..	3	4	4	..	1	..	..	1	25
26	Boston University School of Medicine	1	..	..	3	..	2	..	..	..	..	..	2	2	..	1	26
27	Harvard Medical School	1	1	..	8	3	3	..	..	2	1	2	3	2	3	..	27
28	Tufts College Medical School	..	..	..	1	..	9	..	..	1	..	..	..	..	..	..	28
29	University of Michigan Medical School	..	..	..	..	..	..	..	..	2	..	..	2	..	1	..	29
30	Wayne University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	30
31	University of Minnesota Medical School	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	31
32	University of Mississippi School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32
33	University of Missouri School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	33
34	St. Louis University School of Medicine	1	1	..	10	..	..	..	3	..	..	9	3	..	..	1	34
35	Washington University School of Medicine	1	..	3	4	2	..	..	..	..	..	1	6	2	..	2	35
36	Creighton University School of Medicine	1	..	..	22	2	..	..	..	..	..	..	1	..	9	1	36
37	University of Nebraska College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	37
38	Dartmouth Medical School	..	..	..	..	..	2	..	..	..	..	..	2	..	..	..	38
39	Albany Medical College	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	39
40	Long Island College of Medicine	..	..	..	1	..	2	..	1	..	..	..	..	..	..	1	40
41	University of Buffalo School of Medicine	..	..	..	2	..	1	..	..	..	..	..	..	..	..	..	41
42	Columbia University College of Physicians and Surgeons	..	1	..	4	1	6	..	1	2	..	..	1	2	..	..	42
43	Cornell University Medical College	1	..	..	..	..	2	..	..	2	..	..	1	..	..	1	43
44	New York Medical College, Flower and Fifth Avenue Hospitals	..	..	..	2	..	10	..	..	..	..	..	1	..	..	..	44
45	New York University College of Medicine	..	..	..	4	..	2	..	..	1	..	..	..	..	..	..	45
46	University of Rochester School of Medicine and Dentistry	..	..	..	8	..	2	..	1	..	1	2	1	2	1	..	46
47	Syracuse University College of Medicine	..	..	..	..	..	1	..	..	1	1	..	..	..	..	..	47
48	University of North Carolina School of Medicine	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	48
49	Duke University School of Medicine	1	..	..	1	..	..	..	..	6	4	..	1	1	..	..	49
50	Bowman Gray School of Medicine	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50
51	University of North Dakota School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	51
52	University of Cincinnati College of Medicine	..	..	..	..	..	..	..	..	..	..	1	3	1	..	..	52
53	Western Reserve University School of Medicine	..	..	..	1	..	..	..	..	1	..	..	1	1	1	..	53
54	Ohio State University College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	54
55	University of Oklahoma School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	55
56	University of Oregon Medical School	..	..	..	5	..	..	..	..	..	5	..	..	..	..	..	56
57	Hahnemann Medical College	..	..	..	4	..	..	2	1	..	2	2	1	..	..	..	57
58	Jefferson Medical College of Philadelphia	..	..	..	..	1	1	1	..	..	2	..	1	..	..	..	58
59	Temple University School of Medicine	..	..	..	..	..	3	2	..	5	1	1	2	..	..	..	59
60	University of Pennsylvania School of Medicine	1	..	..	2	..	1	1	..	2	..	1	..	3	1	1	60
61	Woman's Medical College of Pennsylvania	..	..	..	10	..	1	..	1	..	1	..	1	1	..	1	61
62	University of Pittsburgh School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	62
63	Medical College of the State of South Carolina	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	63
64	University of South Dakota School of Medical Sciences	..	..	..	2	..	..	..	..	..	..	..	..	2	..	..	64
65	University of Tennessee College of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	65
66	Meharry Medical College	7	..	1	..	1	..	..	1	3	7	..	6	..	1	..	66
67	Vanderbilt University School of Medicine	2	..	2	..	..	..	..	..	3	2	..	1	1	..	..	67
68	Southwestern Medical College	..	1	..	..	..	..	..	..	..	..	..	1	..	..	..	68
69	University of Texas Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69
70	Baylor University College of Medicine	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	70
71	University of Utah School of Medicine	..	1	..	..	..	1	..	..	..	..	2	..	..	..	..	71
72	University of Vermont College of Medicine	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	72
73	University of Virginia Department of Medicine	..	..	..	..	..	..	1	..	..	1	..	..	1	..	..	73
74	Medical College of Virginia	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	74
75	West Virginia University School of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	75
76	University of Wisconsin Medical School	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	76
77	Marquette University School of Medicine	..	..	1	3	..	..	..	..	..	..	..	5	1	..	..	77
78	University of Alberta Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	78
79	University of Manitoba Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	79
80	Dalhousie University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	80
81	Queen's University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	81
82	University of Western Ontario Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	82
83	University of Toronto Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	83
84	McGill University Faculty of Medicine	..	..	..	3	..	..	..	..	..	..	..	..	1	..	..	84
85	University of Montreal Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	85
86	Laval University Faculty of Medicine	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	86
87	University of Saskatchewan School of Medical Sciences	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	87
	Totals	91	17	101	325	76	73	7	46	76	134	28	339	180	186	82	
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

* Figures include two freshman classes.

† Figures are for students in beginning premedical year.

in the United States and Canada, 1947-1948

Marginal Number	Kentucky	Louisiana	Maine	Maryland	Massachusetts	Michigan	Minnesota	Mississippi	Missouri	Montana	Nebraska	Nevada	New Hampshire	New Jersey	New Mexico	New York	North Carolina	North Dakota	Ohio	Oklahoma	Oregon	Pennsylvania	Rhode Island	South Carolina	South Dakota	Tennessee	Texas	Utah	Vermont	Virginia	Washington	West Virginia	Wisconsin	Wyoming	U. S. Territories and Possessions	Canada	Foreign	Totals	Marginal Number
1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	1	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	1	..	32	1
2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	2
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	3
4	1	..	..	..	2	5	1	..	..	2	..	1	..	..	..	1	..	..	1	1	1	1	..	..	..	2	2	..	..	..	2	1	3	12	8	2	79	4
5	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	67	5
6	..	..	..	..	..	..	..	..	..	..	..	1	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	2	1	68	6
7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	69	7
8	..	..	2	1	5	1	..	..	..	..	..	..	..	3	..	13	..	1	..	1	..	..	..	..	..	..	2	1	1	1	..	2	..	1	2	60	8
9	..	..	1	2	8	1	..	..	..	..	..	..	1	22	..	40	..	..	2	..	..	16	..	..	..	..	1	..	1	..	1	..	4	..	2	2	129	9
10	1	..	..	1	7	1	2	1	..	..	..	1	..	1	..	4	..	..	5	..	1	8	..	..	..	..	1	..	1	..	6	3	3	1	1	2	88	10
11	..	3	..	2	..	1	..	1	..	..	..	..	..	2	..	18	3	..	5	..	..	6	..	1	..	..	4	..	..	..	8	..	..	1	1	2	85	11
12	..	..	..	..	..	1	..	..	..	2	..	..	..	..	..	3	1	..	1	..	..	..	..	..	..	..	5	..	..	..	1	..	..	..	..	..	65	12
13	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	77	13
14	1	..	..	..	..	..	1	..	..	..	1	..	..	1	..	5	..	..	11	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	1	..	88	14
15	..	1	..	..	1	4	1	1	2	1	1	1	..	..	..	1	1	..	7	2	..	1	..	..	..	..	3	..	5	4	..	1	1	5	..	..	127	15
16	..	..	..	..	1	1	..	..	..	..	1	..	..	..	..	5	..	1	9	..	..	1	..	..	..	..	..	..	1	2	..	..	..	1	..	..	94	16
17	..	..	..	..	..	..	1	..	..	1	..	..	..	1	..	5	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	167	17
18	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	1	130	18
19	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	90	19
20	..	..	..	..	..	..	..	..	..	7	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	84	20
21	80	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	1	..	..	..	..	..	..	1	..	96	21
22	2	16	..	..	..	..	..	1	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	2	109	22
23	2	42	..	..	1	..	..	21	..	..	..	..	..	1	2	5	1	..	2	1	..	2	..	..	..	..	1	27	..	..	..	..	..	..	1	..	145	23
24	2	..	1	13	2	4	1	..	..	1	..	..	..	1	5	6	2	..	2	..	..	4	..	1	..	1	1	6	1	..	2	2	4	..	1	4	73	24
25	..	..	..	49	3	..	..	..	..	..	..	..	..	1	4	2	3	..	5	..	..	6	..	..	..	..	..	1	..	..	..	..	3	1	..	..	76	25
26	..	..	..	..	24	..	..	..	..	..	..	1	..	3	1	..	..	..	1	..	1	3	..	..	..	..	..	..	..	..	..	..	1	1	1	3	111	26
27	3	..	1	..	17	1	1	..	4	2	..	..	1	3	1	16	1	..	7	1	..	3	..	..	..	..	1	4	..	..	2	2	3	1	..	112	27
28	..	..	5	..	8	..	..	..	..	..	..	..	1	1	..	1	..	..	1	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	..	120	28
29	..	..	..	..	..	111	1	..	..	..	..	..	..	..	..	..	..	..	7	..	..	2	..	..	..	..	1	..	..	..	..	..	1	..	1	..	129	29
30	..	..	..	..	..	68	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66	30
31	..	..	..	..	1	114	..	..	..	..	..	..	..	..	..	3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	4	..	..	..	123	31
32	..	..	..	..	..	..	..	61	..	..	..	..	..	..	..	83	1	..	3	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	61*	32
33	..	..	..	..	..	..	..	..	43	..	..	..	..	..	..	3	1	..	5	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	48	33
34	2	..	..	..	..	6	1	1	19	3	1	..	1	1	..	3	..	2	18	1	1	7	..	..	1	1	4	..	..	..	6	1	1	2	1	1	115	34
35	2	..	..	..	..	..	1	..	23	1	..	..	..	..	1	3	..	..	4	..	..	..	..	..	..	..	1	1	..	..	3	..	2	..	1	1	86	35
36	1	..	..	..	..	..	1	..	5	2	11	..	..	..	..	4	..	..	2	..	..	..	..	..	..	..	1	..	..	..	5	..	..	4	3	..	75	36
37	..	..	..	..	..	..	1	..	..	2	23	..	..	..	..	1	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	..	..	1	1	..	69	37
38	..	..	1	..	7	..	..	..	..	..	..	..	2	3	..	3	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	84	38
39	..	..	..	..	2	1	..	..	..	..	..	..	1	3	..	37	..	..	..	..	..	1	2	..	..	..	..	..	..	..	..	..	..	..	..	..	113	39
40	..	..	..	..	..	..	..	..	..	..	..	..	18	3	1	18	..	..	3	..	1	..	..	..	..	..	..	..	..	..	..	..	..	1	..	1	71	40
41	..	..	..	..	2	..	..	..	..	..	..	..	3	1	..	18	..	..	5	..	..	6	..	..	1	..	..	..	..	..	..	..	..	1	..	1	93	41
42	1	1	1	1	4	1	..	1	..	1	..	..	1	12	..	30	..	..	4	..	..	3	..	..	..	..	1	..	1	..	1	2	1	..	1	4	114	42
43	1	..	4	..	6	1	..	..	..	3	..	..	2	12	..	41	..	..	4	..	..	8	..	1	..	..	1	..	1	..	1	1	1	..	..	..	124	43
44	..	..	..	..	3	1	..	..	..	..	..	..	..	10	..	28	..	..	1	..	..	2	1	..	..	..	..	..	..	..	1	1	..	..	..	1	127	44
45	..	..	..	1	..	..	..	..	..	..	..	..	..	4	..	23	..	..	2	..	1	1	..	..	..	..	..	..	..	..	1	1	..	1	..	..	86	45
46	..	..	..	..	1	..	..	..	..	..	..	..	..	4	..	38	..	..	2	..	..	4	..	..	..	..	..	..	..	..	..	..	..	..	..	1	56	46
47	..	..	..	..	..	1	..	..	..	..	..	..	1	4	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	2	1	..	..	..	58	47
48	..	..	..	..	..	..	..	..	..	..	..	..	1	3	..	17	..	..	3	..	..	..	..	..	..	..	2	..	..	..	..	1	..	..	..	..	73	48
49	2	..	1	1	..	..	..	..	..	..	..	..	..	1	..	41	..	25	3	..	..	3	..	..	..	..	3	..	1	..	4	1	..	..	2	..	54	49
50	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	23	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	87	50
51	4	..	..	..	1	1	..	..	..	..	1	..	..	1	..	2	..	..	23	..	..	1	..	..	..	1	..	..	..	..	..	2	1	..	2	..	87	51
52	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	6	..	..	84	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	2	..	85	52
53	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	66	53
54	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	46	..	..	..	..	..	..	..	..	..	..	13	..	..	6	..	73	54
55	..	..	..	1	..	1	1	..	..	..	1	..	..	11	..	11	2	..	7	1	..	51	..	..	..	..	1	..	..	..	1	3	6	1	1	..	105	55
56	..	..	..	..	1	2	..	2	..	..	..	..	1	11	..	4	2	1	2	1	..	39	..	1	..	..	1	..	4	..	1	3	1	..	2	..	133	56
57	..	..	2	..	1	1	..	..	2	..	..	1	1	7	..	9	4	..	2	1	..	72	..	1	..	2	2	..	1	..	3	3	3	..	1	..	129	57
58	..	..	..	1	1	4	..	1	1	2	..	..	..	3	..	6	..	..	4	..	1	64	..	1	..	..	1	..	1	..	..	..	2	..	1	..	90	58
59	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	83	..	..	..	1	..	..	..	..	..	..	..	..	..	..	90	59
60	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	60	..	7	..	..	..	60	..	..	..	..	..	..	..	..	..	..	69	60
61	..	..	..	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	23	..	..	..	..	..	23	..	..	..	..	..	..	..	..	..	..	46	61
62	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	152	1	..	..	1	..	..	..	..	..	157	62
63	1	..	..	1	..	2	..	2	1	..	1	..	..	..	..	3	6	..	1	1	..	4	..	..	..	..	6	5	..	..	3	..	..	1	..	1	63	63
64	1	..	..	..	..	..	..	2	..	..	1	..	..	1	1	2	1	..	..	..	..	..	..	..	..	..	25	..	..	..	1	..	1	..	1	..	55	64
65	2	..	..	..	..	..	..	..	..	..	1	..	..	..	1	..	..	..	..	..	..	..	..	..	..	2	1	54	..	..	..	..	..	3	..	..	61	65
66	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	1	106	..	..	..	..	..	..	..	..	108	66
67	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	88	..	..	..	..	..	..	..	..	92	67
68	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	43	..	..	..	..	..	1	..	50	68
69	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	28	..	..	..	..	..	..	41	69
70	..	..	1	..	1	..	..	..	..	..	..	..	..	1	..	5	..	..	1	..	..	1	1	..	..	..	..	..	..	..	..	..	..	..	..	..	72	70
71	1	..	..	1	..	..	..	..	..	..	..	..	..	1	..	3	..	..	1	..	..	4	..	..	..	..	..	..	57	1	..	..	..	..	..	..	84	71
72	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	3	..	..	..	..	1	..	..	..	1	..	..	68	..	7	..	..	..	1	..	81	72
73	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	31	..	..	..	..	..	31	73
74	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	74	..	..	..	1	..	76	74
75	..	..	..	..	..	..	6	5	..	..	1	..	..	2	..	8	..	..	3	..	1	2	..	..	..	1	..	..	..	..	60	..	..	..	..	..	100	75
76	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	76
77	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	50	77
78	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	53	78
79	..	..	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5	79
80	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	63	80
81	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	59	81
82	..	..	..	..	2	..	..	..	..	..	..	..	1	2	..	4	..	..	..	..	1	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	149	82
83	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	93	83
84	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	118	84
85	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	87	85
86	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	32	86
87	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	87
	106	140	19	87	197	236	143	98	128	18	101	7	17	221	12	745	142	36	352	86	56	473	12	87	35	196	238	60	33	166	54	76	102	10	76	816	73	7,315
	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53

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In table 14 is recapitulated the number of resident students, students from other states, students from United States territories and possessions, Canadian students and foreign students enrolled in the 1947-1948 freshman class in each school in the United States and Canada.

In 1946-1947 six schools did not admit any out of state students. In the two preceding years every medical school in the United States had accepted some out of state students. During 1947-1948, the number of schools that admitted no out of state students increased to nine. They were Alabama, Georgia, Wayne, Mississippi, Missouri, Oklahoma, South Carolina, Texas and West Virginia. Five schools admitted only 1 or 2 nonresidents. Twenty-two schools admitted more nonresident than resident students, and one school admitted an equal number of residents and nonresidents.

TABLE 13.—*Ratio of Freshman Medical Students[1] to State Populations, Academic Year 1947-1948*

Number of students per 100,000 of population[2] in the medical and basic science schools of the United States

*Rhode Island	1.6	Pennsylvania	4.0
*Maine	2.1	South Carolina	4.6
*New Mexico	2.2	Indiana	4.7
*Delaware	2.4	Mississippi	4.7
North Carolina	2.5	Texas	4.7
*Washington	2.5	Iowa	4.8
*Arizona	2.6	Kansas	4.8
New Hampshire	3.1	Minnesota	4.9
Alabama	3.2	Wisconsin	4.9
*Florida	3.2	*Nevada	5.0
California	3.3	*New Jersey	5.4
Missouri	3.5	Arkansas	5.3
*Montana	3.7	New York	5.3
Oklahoma	3.7	District of Columbia	5.5
Oregon	3.7	Louisiana	5.5
*Wyoming	3.7	*Idaho	5.7
Kentucky	3.8	Virginia	5.7
Michigan	3.8	South Dakota	6.2
Maryland	4.0	Tennessee	6.4
West Virginia	4.1	North Dakota	6.5
Georgia	4.2	Colorado	6.7
Illinois	4.2	Nebraska	7.8
Massachusetts	4.2	Vermont	9.1
Connecticut	4.3	Utah	9.4
Ohio	4.5		

* State with no medical or basic science school.
1. Calculations based on one freshman class for each school.
2. 1947 estimate of U. S. Census Bureau.

There were 74 freshman students, 14 fewer than in 1946-1947, from the territories and possessions of the United States. All these students were enrolled in schools in the United States. Attention has been called recently to Puerto Rico's need for additional well trained physicians.[1] It has been suggested that this need can be met if the medical schools in the United States will admit 30 to 50 properly qualified students from Puerto Rico annually. During 1946-1947, 67 students from Puerto Rico were enrolled in the freshman classes of the medical schools in the United States, while in 1947-1948 the number was 57. It is to be hoped that similar numbers of well qualified students from Puerto Rico will continue to find opportunities for training in this country in the years ahead.

Twenty-two students from Canada were enrolled as freshmen in schools in this country. Fifty-eight students from other foreign countries, 4 more than in 1946-1947, were enrolled in the freshman classes in twenty-eight medical schools in the United States.

Of the 828 beginning students in the Canadian schools, 19 came from the United States in 1947-1948. This number is 6 more than in the preceding year. Canadian schools enrolled 15 begining students from other foreign countries.

1. Editorial, J. A. M. A. **136**: 1101 (April 24) 1947.

TABLE 14.—*Residence of Freshman Students in Medical and Basic Science Schools in the United States and Canada, 1947-1948*

	Home State	Other State	Terr. & Poss.	Canadian	Foreign	Totals
Medical College of Alabama	82	0	0	0	0	82
University of Arkansas	80	1	0	0	0	81
University of California	68	3	1	0	1	72
College of Medical Evangelists	13	63	3	12	8	79
University of Southern California	59	6	0	0	0	67
Stanford University	51	9	2	0	1	63
University of Colorado	58	2	0	0	0	60
Yale University (Connecticut)	10	67	1	0	2	80
Georgetown University (District of Columbia)	6	108	4	0	2	120
George Washington University	25	60	2	0	1	88
Howard University	4	61	2	0	8	75
Emory University (Georgia)	30	34	1	0	0	65
University of Georgia	77	0	0	0	0	77
Stritch School of Medicine (Illinois)	48	28	1	0	1	78
Northwestern University	50	75	0	0	2	127
University of Chicago	32	32	0	0	0	64
University of Illinois	151	16	0	0	0	167
Indiana University	125	4	0	0	1	130
State University of Iowa	88	2	0	0	0	90
University of Kansas	79	7	0	0	0	86
University of Louisville (Kentucky)	80	13	3	0	0	96
Louisiana State University	93	4	1	0	2	100
Tulane University of Louisiana	42	100	1	0	0	143
Johns Hopkins University (Maryland)	13	55	1	0	4	73
University of Maryland	49	45	2	0	0	96
Boston University (Massachusetts)	28	39	2	1	0	70
Harvard Medical School	15	88	2	0	3	111
Tufts College Medical School	88	24	0	0	0	112
University of Michigan	111	17	1	0	0	129
Wayne University	68	0	0	0	0	68
University of Minnesota	114	9	0	0	0	123
University of Mississippi	61	0	0	0	0	61
University of Missouri	43	0	0	0	0	43
St. Louis University	19	92	3	0	1	115
Washington University	33	50	2	0	1	86
Creighton University (Nebraska)	11	59	3	0	2	75
University of Nebraska	83	5	1	0	0	89
Dartmouth Med. School (New Hampshire)	2	21	0	0	0	23
Albany Medical College (New York)	57	10	1	0	0	68
Long Island College of Medicine	83	29	0	1	0	113
University of Buffalo	48	21	1	0	1	71
Columbia University	59	50	1	0	4	114
Cornell University	41	44	0	0	0	85
New York Medical College	79	46	0	0	0	124
New York University	74	28	0	0	1	103
University of Rochester	33	34	0	1	0	68
Syracuse University	38	15	2	0	1	56
University of North Carolina	47	9	0	0	0	56
Duke University	24	46	2	0	1	73
Bowman Gray School of Medicine	41	13	0	0	0	54
University of North Dakota	20	5	0	0	0	25
University of Cincinnati (Ohio)	73	14	0	0	0	87
Western Reserve University	57	19	0	0	2	78
Ohio State University	84	1	0	0	0	85
University of Oklahoma	60	0	0	0	0	60
University of Oregon	40	36	0	0	0	76
Hahnemann Med. College (Pennsylvania)	51	48	0	0	0	105
Jefferson Medical College	90	63	3	0	0	156
Temple University	72	52	3	0	1	128
University of Pennsylvania	64	50	3	0	2	119
Woman's Medical College	7	40	2	0	1	50
University of Pittsburgh	82	3	0	0	0	85
Medical College of South Carolina	39	0	0	0	0	39
University of South Dakota	23	7	0	0	0	30
University of Tennessee	122	5	0	0	0	127
Meharry Medical College	6	55	1	0	5	67
Vanderbilt University	25	27	0	0	1	53
Southwestern Medical College (Texas)	54	4	2	0	0	61
Baylor University	68	4	0	0	0	72
University of Texas	106	0	0	0	0	106
University of Utah	43	7	0	0	0	50
University of Vermont	28	13	0	0	0	41
University of Virginia	57	15	0	0	0	72
Medical College of Virginia	69	15	1	0	0	84
West Virginia University	31	0	0	0	0	31
University of Wisconsin	74	1	0	0	0	75
Marquette University	60	40	0	0	0	100
University of Alberta (Canada)	50	0	0	0	0	50
University of Manitoba	90	0	0	0	0	90
Dalhousie University	53	0	0	0	3	56
Queen's University	63	9	0	0	1	63
University of Western Ontario	50	1	0	0	0	50
University of Toronto	149	0	0	0	1	150
McGill University	98	15	0	0	2	115
University of Montreal	118	0	0	0	2	120
Laval University	87	0	0	0	0	87
University of Saskatchewan	32	0	0	0	0	32
Totals	5,094	2,020	74	22	75	7,315

Required Internships

The medical schools that require students to serve an internship before they are granted the degree of Doctor of Medicine are shown in table 15. Six schools in the United States and four in Canada have this requirement. During the past year, Alberta discontinued the requirement, while Queen's instituted it for classes entering in September 1947, and subsequently.

During the academic year 1947-1948 there were 447 students from schools in this country and 230 from Canada in the required year of internship training or

TABLE 15.—*Medical Schools Requiring an Internship*

United States
College of Medical Evangelists
University of Southern California School of Medicine
Stanford University School of Medicine
Northwestern University Medical School
University of Minnesota Medical School
Duke University School of Medicine *
Canada
University of Manitoba Faculty of Medicine
Dalhousie University Faculty of Medicine
University of Montreal Faculty of Medicine
Queen's University Faculty of Medicine †

* Degree not withheld until internship completed.
† Effective for students entering in September 1947.

research. The number of students from schools in this country in the required intern year is shown for each year since 1930-1931 in table 16.

States requiring the internship for licensure are listed in table 17. There are twenty-three such states. In addition, the District of Columbia, Alaska, Hawaii, the Virgin Islands, the Canal Zone and the homeopathic board of Connecticut require an internship for licensure. Puerto Rico now requires a two year rotating internship.

The licensing boards of the Canal Zone, Delaware, Hawaii, Idaho, Illinois, Iowa, Michigan, New Jersey, North Dakota, Pennsylvania, Rhode Island, Utah, Vermont, Washington and Wisconsin require the internship to be a rotating service.

Five states (Connecticut, Maryland, Missouri, Texas and Virginia) whose laws do not require internship

TABLE 16.—*Students in the Required Intern Year in the United States, 1931-1948*

1930-1931	1,095
1931-1932	1,067
1932-1933	1,108
1933-1934	1,183
1934-1935	1,233
1935-1936	1,213
1936-1937	1,255
1937-1938	1,132
1938-1939	1,152
1939-1940	1,152
1940-1941	1,058
1941-1942	767
1942-1943	639
1943-1944	451
1944 (second session)	447
1944-1945	452
1945-1946	488
1946-1947*	582
1947-1948	447

* Includes additional class.

training withhold the licenses of candidates from schools requiring an internship for the degree of Doctor of Medicine until the internship is completed. In these states the examination may be taken at any time after completion of the medical school course.

Some states in addition to those listed in table 17 require an internship of graduates from schools outside the United States and Canada and of applicants for reciprocity or endorsement.

The hospitals approved for intern training by the Council on Medical Education and Hospitals of the American Medical Association are generally acceptable in those states requiring an internship for licensure.

TABLE 17.—*Medical Licensing Boards Requiring a One Year Internship* †

Alabama	Michigan *	Puerto Rico ‡
Alaska	Montana	Rhode Island *
Canal Zone *	Nevada	South Dakota
Connecticut (Homeo. Board)	New Hampshire	Utah *
Delaware *	New Jersey *	Vermont *
District of Columbia	New Mexico	Virgin Islands
Hawaii *	North Dakota *	Washington *
Idaho *	Oklahoma	West Virginia
Illinois *	Oregon	Wisconsin *
Iowa *	Pennsylvania *	Wyoming

† Some states in addition to those included in this table require the internship for graduates of medical faculties abroad and from reciprocity or endorsement applicants.
* Internship must be a rotating service.
‡ Two year rotating internship required.

The current list of approved internships was published in the May 1, 1948 issue of THE JOURNAL. Additions to this list appear on page 43 of this issue.

Length of the Academic Year

The length of the academic year in the medical schools and schools of the basic medical sciences in the United States shows considerable variation. For the first and second years it varies from 31 to 44 weeks and averages 34.2 weeks and 34.4 weeks respectively. The third year ranges from 31 to 45.5 weeks and averages 34.9 weeks. The range for the fourth year is from 31 to 52 weeks. The average is 35.7 weeks.

Since the year 1939-1940, nineteen schools have increased the length of the first and second years, eighteen the length of the third year, and seventeen the length of the fourth year. During the same period eight schools have shortened the first year, six the second year, and five the third and fourth years. The net effect of these changes has been to increase the average length of the total medical school course, excluding a required intern year, in the United States from 136.4 weeks to 139.2 weeks.

Graduate, Part Time and Special Students

In table 18 are listed for the United States and Canada those students other than regular medical students and students in a required intern year who were pursuing courses in the medical schools in 1947-1948.

During this period 813 physicians were enrolled in thirty-seven medical schools in the United States for work leading to advanced degrees. In Canada 257 physicians were enrolled for similar work in seven schools. Minnesota with 225 reported the largest number of such students. In Canada, McGill had 166 physicians enrolled.

Forty-three medical schools in the United States enrolled a total of 1,090 other graduate students who were working for advanced degrees in the basic medical sciences. The largest number, 200, was at the University of Chicago. In Canada 68 graduate students were enrolled. Forty-one of these were at McGill.

The number of graduate students enrolled in the medical schools is the highest since the beginning of the war. The number is not significantly greater than before the war, however. It would appear therefore that the deficiency of trained teachers and investigators that was allowed to develop during the war is not being made up as rapidly as might be hoped.

In addition to graduate students, there were 478 other nonmedical students taking medical courses in the United States and 60 in Canada.

Thirty-seven medical schools in the United States reported a total of 2,338 physicians enrolled in formal basic science courses in preparation for certification by a specialty board. The highest enrolments in such courses were reported by Wayne and Northwestern, which had 234 and 231 students respectively. There were 100 physicians enrolled in similar courses in four Canadian schools.

Fifty-one medical schools in the United States reported a total enrolment of 13,187 physicians in refresher or continuation courses. Two Canadian schools reported a total enrolment of 260 students in courses of this type.

One hundred and five part time or special medical students were enrolled in thirty-three medical schools in the United States.

The figures for the various categories of students listed total 18,011 for the medical schools in the United States and 747 for the Canadian schools. It is probable that a few students were reported in more than one category. Even allowing for this possibility, the total is impressive evidence that the educational responsibilities of the medical schools extend beyond the undergraduate student body to another body of students which is approximately three fourths as large. Furthermore this group does not include the interns or all the residents who receive clinical instruction from medical school departments, nor does it include the students in dentistry, nursing, pharmacy and various technical fields who in many schools receive part of their instruction in a medical school.

Premedical Training

The minimum requirement of the Council on Medical Education and Hospitals for admission to approved medical schools since 1918 has been two years of college training. In 1938 the Council recommended that at least three years of college training be required of all candidates for admission. With the exception of California the state licensing boards, by statute in the majority of instances, require that an applicant for licensure must present evidence of having completed two years of college. Seventy-five of the eighty-seven schools in the United States and Canada require three or more years of premedical work. Five schools, Georgetown, Johns Hopkins, Tufts, Vanderbilt and

TABLE 18.—*Other Students Enrolled in Medical Schools, 1947-1948*

School	Physicians Enrolled for Advanced Degrees	Graduate Students Enrolled for Degrees in the Basic Medical Sciences	Nonmedical Students Taking Medical Courses	Physicians Enrolled in Formal Basic Science Courses in Preparation for Specialty Board Certification	Physicians Enrolled in Refresher or Continuation Courses	Part Time or Special Medical Students Working Toward M.D. Degree	Totals
Medical College of **Alabama**	1	1	36	11	3	2	54
University of **Arkansas**	0	3	9	0	0	6	18
College of Medical Evangelists **(Calif.)**	0	0	0	46	0	0	46
Stanford University	0	0	0	0	180	0	180
University of California	0	0	0	0	727	0	727
University of Southern California	3	0	0	127	667	0	797
University of **Colorado**	3	35	0	88	430	10	566
Yale University **(Connecticut)**	0	77	9	100	185	0	371
George Washington University **(D. C.)**	0	0	0	0	535	0	535
Georgetown University	1	3	4	0	43	0	51
Emory University **(Georgia)**	0	0	25	0	150	1	176
University of Georgia	0	0	3	0	99	11	113
Strich Sch. of Med. **(Ill.)**	1	5	1	3	0	4	14
Northwestern University	79	50	30	231	32	6	428
University of Chicago	14	200	0	3	0	0	217
University of Illinois	42	55	3	49	268	2	419
Indiana University	2	8	12	20	447	1	490
State University of **Iowa**	20	24	0	61	597	0	704
University of **Kansas**	18	2	5	27	686	2	740
University of Louisville **(Ky.)**	4	1	3	0	71	2	81
Louisiana State University	0	0	0	82	50	0	132
Tulane University	12	0	0	31	242	1	286
Johns Hopkins Univ. **(Md.)**	0	0	2	0	59	5	66
University of Maryland	2	7	2	0	128	1	140
Boston University **(Mass.)**	0	21	0	0	0	0	21
Harvard Medical School	0	35	0	0	602	0	637
Tufts College Medical School	2	6	0	52	536	0	596
University of **Michigan**	0	0	0	0	0	1	1
Wayne University	118	21	0	234	116	0	489
University of **Minnesota**	225	157	5	57	415	0	859
University of **Mississippi**	1	2	58	0	0	3	64
St. Louis University **(Mo.)**	52	27	16	14	0	1	110
University of Missouri	0	13	13	0	0	0	26
Washington University	0	45	0	129	172	0	346
Creighton University **(Neb.)**	6	0	2	0	0	7	15
University of Nebraska	8	9	0	0	28	1	46
Dartmouth Medical School **(New Hampshire)**	0	0	0	0	40	0	40
Albany Medical College **(New York)**	0	0	0	0	0	3	3
Columbia University	14	0	0	360	970	0	1,184
Cornell University	0	17	0	22	163	0	202
Long Island Coll. of Medicine	28	0	0	0	550	0	578
New York Medical College	22	0	0	44	148	0	214
New York University	4	30	6	160	643	0	835
Syracuse University	0	5	0	0	90	0	95
University of Buffalo	0	0	0	0	0	3	3
Duke University **(North Carolina)**	0	10	0	6	106	0	122
University of North Carolina	1	14	30	0	283	3	321
Bowman-Gray School of Medicine	1	4	0	0	1	1	7
University of **North Dakota**	0	1	0	0	0	0	1
Ohio State University	0	0	0	0	46	0	46
University of Cincinnati	21	17	0	0	190	0	228
Western Reserve University	0	38	0	42	0	2	102
University of Oklahoma	4	3	3	211	114	0	335
University of **Oregon**	6	11	1	0	645	0	663
Hahnemann Medical College **(Pennsylvania)**	0	1	0	0	0	0	1
Temple University	1	0	0	53	55	0	109
University of Pennsylvania	0	50	0	0	45	0	95
University of Pittsburgh	0	0	0	100	0	1	101
Woman's Medical College	0	0	1	0	0	0	1
Medical College of **South Carolina**	0	0	0	10	275	0	285
University of **South Dakota**	0	0	59	0	0	5	64
Meharry Medical College **(Tennessee)**	0	3	1	1	15	3	23
University of Tennessee	19	13	9	0	0	0	41
Vanderbilt University	9	4	0	0	2	1	16
Baylor University **(Texas)**	0	0	0	8	172	2	182
Southwestern Medical College	0	6	2	30	32	1	55
University of Texas	0	6	1	0	736	0	743
University of **Utah**	10	31	53	0	41	2	145
University of **Vermont**	1	0	8	33	6	0	48
Medical College of **Virginia**	0	0	4	4	170	0	178
University of Virginia	10	0	0	0	0	0	10
West Virginia University	0	8	0	0	0	0	8
Marquette University **(Wis.)**	48	4	10	46	0	5	113
University of Wisconsin	0	3	62	5	159	6	235
Totals	813	1,090	478	2,338	13,187	105	18,011
CANADA							
Laval University	7	2	50	0	0	0	59
McGill University	166	41	0	0	0	0	207
Queen's University	15	0	30	5	0	0	50
University of Alberta	0	0	0	8	195	0	203
University of Manitoba	8	2	0	0	0	0	10
University of Montreal	4	0	0	0	6	0	10
University of Saskatchewan	0	2	0	0	0	0	2
University of Toronto	35	15	0	60	39	0	149
University of Western Ontario	22	6	0	37	0	2	67
Totals	257	68	80	100	240	2	747

Laval, require a bachelor's degree. Georgetown, however, requires only 90 semester hours of college work from veterans.

Almost all medical schools are now urging that candidates for admission to medical school arrange their college courses so as to acquire as broad an educational background as possible. Traditionally premedical students have concentrated on courses in biology, chemistry and physics in the belief that such concentration will aid them in gaining admission to medical school or that it will enable them to do better work in medical school. For several years the medical schools have been trying without too great success to persuade premedical students that in passing on a candidate for admission they are primarily concerned with the quality of the work that he has done in the sciences and not the quantity. They have also sought to convince the premedical student that experience has shown that he will experience no undue difficulty in his medical school work if he has taken no more than the minimum number of scientific courses required for admission.

The medical schools recognize that, if the physician is to make his full potential contribution to society, he requires a broad cultural background and an understanding of the forces that shape the world in which he practices his profession. Medical schools are therefore urging students to include in their college programs courses in history, literature, sociology, economics, political science, psychology, philosophy and the fine arts.

The cooperation of the premedical advisers in the undergraduate colleges is needed in gaining acceptance of these suggestions. During the past year the Association of American Medical Colleges has prepared and circulated to the colleges a valuable guide for premedical advisers entitled "Handbook for Advisers to Students Planning to Enter Medicine." If this handbook receives the attention to which it is entitled, a general improvement in the pattern of premedical education in this country should result.

The 1948 Freshman Class

The medical schools and schools of the basic medical sciences in the United States estimate that they will enroll 6,407 freshman students during the academic year 1948-1949. By June of this year the schools had selected 5,907 students for admission. This group included 4,028 male veterans (68 per cent), 1,438 other men (25 per cent) and 441 women (7 per cent). Forty-nine of the women are veterans.

These preliminary figures suggest that there will be slightly fewer veterans in the 1948 freshman class than in the 1947 class. It seems likely that this latter class will mark the peak in the admission of veterans of World War II to medical schools. It would also appear that there will be somewhat fewer women than in the last four or five freshman classes.

Financial Support of Medical Schools

The budgets of the medical and basic science schools in the United States for the academic year 1948-1949 total approximately $51,000,000. This sum represents an increase of $8,000,000 or 18.6 per cent over the total budgets of the same schools for the year 1947-1948.

The figure $51,000,000 does not include grants for research or special teaching projects from outside agencies or any significant portion of the cost of operating the teaching hospitals of the country. It does include a total of approximately $2,900,000 that the medical schools will spend to support certain activities in their affiliated hospitals. This sum is largely made up of salaries of professional and technical personnel on hospital staffs and the cost of operating special laboratories in affiliated hospitals and clinics. A small portion represents contributions to the operating budgets of hospitals and dispensaries used by the medical school for teaching purposes. It should be pointed out that part of the increase of $8,000,000 in the budgets reported by the medical schools is accounted for by the fact that some schools included these various expenditures in their affiliated hospitals for the first time in reporting their budgets for 1948-1949.

This year all but fourteen schools supplied figures which included the cost of maintenance of the physical plant and all but four the cost of operating the library. Last year thirty-three schools did not report the cost of plant maintenance, and twenty-six did not include the budgets of their libraries.

Last year's figures included charges for general university administration for eighteen schools. Such a charge constitutes a real part of the cost of medical education, but since the majority of schools do not carry a charge for general university administration, the eighteen schools that do were asked to deduct it so that the figures obtained from each school might be more comparable. This year only three schools indicated that this charge was included in the budgetary figures that they reported. The net result of including the cost of plant maintenance and operation of the library and deducting the charge for general university administration was to increase the total budgets of the medical schools by $1,000,000.

TABLE 19.—*Expenditures per Student by the Medical and Basic Science Schools in the United States, 1948-1949*
Excluding research funds from outside sources

	Number of Schools
$ 735 to 999	5
1,000 to 1,499	11
1,500 to 1,999	22
2,000 to 2,499	17
2,500 to 2,999	10
3,000 to 3,999	7
4,000 to 4,999	3
Over 5,000	2
Total	77

Not included in the $51,000,000 that it will cost to operate the medical schools during the coming year are the direct and frequently substantial contributions that many teaching hospitals make to the educational programs of their affiliated schools. These contributions take the form of partial or full support of teaching personnel, research and student laboratories, and the furnishing of classroom space and other accommodations. Neither does the $51,000,000 include the value of the services contributed by unpaid members of the teaching staffs. In many schools teachers who serve without pay are responsible for a major part of the instruction in the clinical departments.

The schools have estimated that during the academic year 1948-1949 they will receive from outside agencies a total of $16,630,000 in grants for research and $3,200,000 in grants for special teaching activities. Last year funds in these categories totaled $15,400,000 and $2,600,000 respectively.

The range of expenditures per student that the schools will make during 1948-1949 varies from $735 to $9,500. In table 19 the seventy-seven medical and basic science schools in the United States have been

arranged in eight groups according to their anticipated expenditures per student. Grants from outside agencies for teaching and research were excluded in these computations. A comparison of these figures with those for 1947-1948 reveals that for the coming academic year the number of schools spending less than $1,500 per student has decreased from 34 to 16, and the number spending $2,000 or more per student has increased from 29 to 39.

Receipts from tuition fees during the coming year will total only $12,800,000, or 25 per cent of the budgets of the medical schools. In 1947-1948 tuition fees provided approximately $12,000,000, or 28 per cent of the budgets of the medical schools. Last year it was reported that seventeen schools were unable to match student fees dollar for dollar with funds from nonstudent sources. The number of schools in this category for 1948-1949 has decreased to seven.

This review of the financial status of the medical schools indicates that the schools have experienced a definite measure of success in securing additional operating funds during the past year. The increase in funds has made it possible for most schools to maintain the quality of their educational programs even in the presence of inflation. The schools owe much of their success in meeting the problems of inflation to the deep loyalty of their staffs, whose salaries in many cases have not kept pace with the rising cost of living. Only a few schools have indicated that some curtailment of established activities has been necessary for budgetary reasons.

TABLE 20.—*Fees in Medical and Basic Science Schools in the United States and Canada*

	1947-1948 Number of Schools	1948-1949 Number of Schools
Under $99	1	1
$100 to 199	5	2
200 to 299	14	11
300 to 399	11	15
400 to 499	10	12
500 to 599	18	12
600 to 699	22	23
700 to 799	4	8
800 or over	2	3
Total	87	87

The medical schools, however, are almost unanimous in declaring that if they are to continue to meet the problems of inflation successfully and if they are to undertake new developments important to their fundamental programs of undergraduate medical education, they will require additional operating funds in addition to those currently available. About four fifths of the schools were able to furnish estimates of their needs. On the basis of the figures submitted, it can be estimated that the additional funds needed by all the medical schools amount to about $15,000,000 annually. This need for additional funds is not all of recent origin. At least one third of the schools have never received adequate financial support, and the correction of long standing deficiencies is one of the important uses for which additional funds are needed.

The medical schools were also asked to estimate the additional funds that they need for capital developments. Five schools indicated that they did not need additional funds. Seventeen schools were unable to furnish estimates. Fifty-five schools supplied estimates which totaled $197,357,960.

Medical education in this country is at the highest point of its development that has yet been reached. Notable advances are still being made. Substantial improvements have been effected, particularly among a large group of the less wealthy schools, many of which have been able to double, triple, or even quadruple their budgets in the last ten years. However, the problems presented by inflation and the recognition that additional advances in our system of medical education could be made if more funds were available are causing those who are responsible for the conduct of medical education concern as to whether satisfactory progress can be maintained in the future. As a consequence, medical educators have been giving close and urgent study to possible methods by which the basic financial support of the medical schools can be increased. In some quarters it is felt that the solution lies in seeking direct federal subsidies on a large scale. This solution implies such a fundamental change in the philosophy of the support and control of medical education that there is a growing conviction that before such aid is sought, an intensive effort should be made to secure the needed funds from voluntary sources and local units of government. There is good evidence for the belief that the medical schools have not adequately presented their problem to the general public and that, if the public can be informed of the needs of the schools and the reasons for these needs, much more generous support of the medical schools will be forthcoming. The ultimate solution of the problem of adequate support of the medical schools is not yet apparent. It may be predicted that the problem will continue during the coming year to receive the serious and critical attention of all who are concerned with medical education.

Fees

The average tuition fee for an academic year charged by the medical schools in the United States increased only 21 per cent from 1940 to 1947. To help meet rising costs a number of schools found it necessary to raise tuition fees for 1947-1948. The average tuition fee for 1947-1948 was $480, representing an increase of 4.5 per cent over 1946-1947 and an increase of 27 per cent over 1939-1940. Thirty-two schools have announced increases in tuition charges for the coming year. These increases will raise the average tuition fee for 1948-1949 to $513, an increase of 7 per cent over the preceding year and an increase of 36 per cent over 1939-1940. While this is a substantial increase, it should be pointed out that it amounts to less than half of the general increase in the cost of living that has occurred during the same period. Attention should also be drawn to the fact brought out in the preceding section that tuition fees will provide only 25 per cent of the cost of operating the medical school during the forthcoming year, and that, despite the increases in tuition, this is a slightly smaller proportion of the total operating costs than was met by student fees in 1947-1948.

A number of medical schools are prepared to give assistance from scholarship and loan funds to individual students who will have difficulty in paying the increased tuition fees.

In table 20 the eighty-seven medical schools and schools of the basic medical sciences in the United States and Canada have been arranged in groups according to tuition fees charged resident students for the sessions 1947-1948 and 1948-1949. The figures are

based on the average tuition fee charged for the complete medical course and include minor charges such as those for matriculation, breakage, diploma and graduation. Thirty-two schools in the United States make an additional charge for nonresidents. These sums vary considerably in amount. The lowest is $55 and the highest $400.

Plans of Medical Students for Future Practice

Concern has been expressed in several quarters in recent years that few present day medical students are planning to enter general practice. The results of studies on this point made by certain of the medical schools are, therefore, of interest. Fifteen schools constituting a representative cross section of the medical schools of the country reported that during the past year they sought information from the students in one or more classes concerning their plans with respect to practice.

Polls of nine senior classes were conducted. In four the majority of students planned to enter general practice and in four to specialize. One class was almost evenly divided. The averages for the nine classes were: 48.9 per cent intended to specialize; 41.6 per cent to enter general practice; 9.5 per cent were undecided.

Four junior classes were polled. In two the majority were undecided. A majority of one class favored general practice. The fourth class was equally divided. The averages for the four classes were: 30 per cent intended to specialize; 32 per cent to enter general practice; 38 per cent were undecided.

Polls of five freshman and sophomore classes revealed that in all but one the majority of students were undecided. The averages for the five classes were: 18 per cent planned to specialize; 30 per cent to enter general practice; 52 per cent were undecided.

The overall averages for the eighteen classes included in the study were: 36 per cent planned the specialize; 36 per cent to enter general practice, and 28 per cent were undecided.

It is of interest to speculate whether all medical schools should be encouraged to conduct such polls annually. A knowledge of the trend of student interest should prove helpful to a school in advising its students. It would also assist the school in reappraising from time to time the influence that its educational program was having on its students in their choice of a career.

Clinical Clerkships

During the last fifteen years there has been a definite trend to scheduling clerkships on inpatient services in the third year of the medical school course. It has been felt that this arrangement is the most satisfactory for providing close supervision and guidance of the student at the time when he is just beginning his work with patients. After serving a well supervised inpatient clerkship, the student should be in a position to derive more benefit from work in the outpatient department, where in general he must work more independently of his instructors. Scheduling the clerkships in the third year also has the advantage of allowing more flexibility in planning the curriculum of the fourth year, since the student enters that year with his basic clinical instruction completed or nearly completed. He can then be given the opportunity to pursue advanced, elective or special courses which he would not have been prepared to take as a third year student and for which there would not be time in the fourth year if the principal clerkships were all postponed to that year.

In 1948-1949 students will serve clerkships on inpatient services in general medicine during the third year in 57 of the 70 medical schools in this country. In 31 schools, the inpatient clerkship will be given only in the third year. In 26 schools it will extend over the third and fourth years.

In general surgery during 1948-1949, clerkships are scheduled for the third year in 48 schools. Twenty of these schools also provide work with inpatients during the fourth year.

Inpatient clerkships in pediatrics will be given in the third year in 47 schools. Fifteen of these schools also have inpatient clerkships in the fourth year.

The clerkship in obstetrics falls entirely in the third year in 20 schools, is limited to the fourth year in 31 schools and is given in both the third and fourth years in 19 schools.

R.O.T.C. Programs in Medical Schools

Forty-nine medical schools and schools of the basic medical sciences have established or are in the process of establishing R.O.T.C. programs. During 1947-1948 somewhat more than 5 per cent of the total student body in the United States was enrolled in these programs.

New Medical Schools

No new medical schools opened during the past year. The University of Washington School of Medicine in Seattle admitted its second freshman class in the fall of 1947. This school is planning to have its full four year program in operation by the fall of 1949 and to graduate its first class in 1950. The organization of the medical school of the University of California in Los Angeles is continuing. Faculty appointments are being made and a building program is being developed. The school has not yet announced the date on which it will open.

Among the two year schools, West Virginia during the past year has been giving active consideration to expanding to a four year program. North Carolina has received authorization from the legislature to expand and is proceeding with the construction of a teaching hospital which will probably be completed by 1951. The Board of Curators of the University of Missouri is studying plans whereby that school can establish a four year program. The other two year schools have no immediate plans for expansion, although two of them, Mississippi and North Dakota, are still actively studying the problem.

Interest in the possibility of establishing new schools of medicine continues to be displayed by various groups in different parts of the country. No definite plans for a new school, however, were announced during the past year.

Survey of Medical Education

In the last Educational Number it was announced that the Council on Medical Education and Hospitals and the Association of American Medical Colleges would undertake a comprehensive survey of medical education in this country. During the past year the two organizations appointed a committee to conduct the survey and prepare and publish a report. The chairman of the committee is President Alan Valentine of the University of Rochester. The other members are Drs. Arthur C. Bachmeyer, Herman G. Weiskotten, Joseph

C. Hinsey, Victor Johnson, Fred C. Zapffe ex officio and Donald G. Anderson ex officio.

The committee has been active during the past year in formulating plans for the survey and has made the following statement concerning the purpose and plan of the survey:

The objectives of the study shall be to evaluate the present programs and determine the future responsibilities of medical education in its broadest aspects for the purpose of:

1. Improving medical education to better meet the over-all needs of the American people for
   (*a*) The prevention of disease
   (*b*) The restoration, so far as possible, to health of all those who suffer illness or injury, and
   (*c*) The maintenance of the best standards of physical and mental health of all the people.
2. Assessing the degree to which medical schools are meeting the needs of the country for physicians.
3. Promoting the advancement of knowledge in the the field of medical science, and
4. Better informing the public concerning the nature, content and purposes of medical education.

The study should encompass the following:

1. An inventory of the existing situation.
2. Determination of the need for changes and improvements.
3. Conclusions and recommendations based on the foregoing.
4. Proposals for ways and means of carrying out the recommendations.

The survey will be initiated during the coming academic year. It is anticipated that it will require three years to complete.

INTERNSHIPS AND RESIDENCIES

The following internships and residency training programs have been approved since the publication of the list of Approved Residencies and Fellowships in THE JOURNAL, May 1, 1948. Those designated with an asterisk (*) have been granted temporary approval in accordance with the plan announced in THE JOURNAL, April 20, 1946, page 1088. Many of the residencies recognized on a temporary basis have been inspected by members of the Council's staff and are now under consideration for transfer to the regularly approved list. Several hospitals not included in the following list have also been surveyed by representatives of the Council and have been recommended for residency approval. These hospitals will be notified as soon as final action on their applications has been completed by the Council and the respective specialty boards.

ADDITIONAL RESIDENCIES APPROVED

Allergy

*Jewish Hospital	Brooklyn

Anesthesiology

*Letterman General Hospital	San Francisco
*Oliver General Hospital	Augusta, Ga.
*Brooke General Hospital	San Antonio, Texas
*U. S. Marine Hospital	Stapleton, S. I., N. Y.
*U. S. Naval Hospital	Bethesda, Md.
*U. S. Naval Hospital	Chelsea, Mass.
*Veterans Admin. Hospital	New Orleans
*Veterans Admin. Hospital	Staten Island, N. Y.
Veterans Admin. Hospital	White River Jct., Vt.
*Colorado General Hospital	Denver
*Denver General Hospital	Denver
*Bridgeport Hospital	Bridgeport, Conn.
*Grace Unit, Grace-New Haven Community Hospital	New Haven, Conn.
*Hospital of St. Raphael	New Haven, Conn.
*Children's Hospital	Washington, D. C.
*Garfield Memorial Hospital	Washington, D. C.
*Georgetown University Hospital	Washington, D. C.
*Riverside Hospital	Jacksonville, Fla.
*Cook County Hospital	Chicago
*Presbyterian Hospital	Chicago
*Indiana University Medical Center	Indianapolis
*St. Joseph Hospital	Lexington, Ky.
*Ochsner Foundation Hospital	New Orleans
*University Hospital	Baltimore
*Memorial Hospital	Worcester, Mass.
*St. Vincent's Hospital	Worcester, Mass.
*Mary Hitchcock Memorial Hospital	Hanover, N. H.
*Elliot Hospital	Manchester, N. H.
Millard Fillmore Hospital	Buffalo
*Mary Immaculate Hospital	Jamaica, N. Y.
*Lenox Hill Hospital	New York City
*St. Clare's Hospital	New York City
*St. Mary's Hospital	Rochester, N. Y.
*Mercy Hospital	Canton, Ohio
*Maumee Valley Hospital	Toledo, Ohio
*Youngstown Hospital	Youngstown, Ohio
*Mercy Hospital	Pittsburgh
*Montefiore Hospital	Pittsburgh
*Robert Packer Hospital	Sayre, Pa.
*Harris Memorial Methodist Hospital	Fort Worth, Texas
*Medical College of Virginia, Hospital Division	Richmond, Va.
*Milwaukee County Hospital	Milwaukee

Cardiovascular Disease

*U. S. Naval Hospital	Bethesda, Md.

Dermatology and Syphilology

*Letterman General Hospital	San Francisco
*Army Institute of Pathology	Washington, D. C.
*Employees' Hospital of the Tennessee Coal, Iron and Railroad Company	Fairfield, Ala.

Gastroenterology

*Hospital of the University of Pennsylvania	Philadelphia

Internal Medicine

U. S. Marine Hospital	New Orleans
Veterans Admin. Hospital	Coral Gables, Fla.
*Veterans Admin. Hospital	Albuquerque, N. M.
Cambridge City Hospital	Cambridge, Mass.
*Springfield Hospital	Springfield, Mass.
Asbury Hospital	Minneapolis
St. Joseph's Hospital	St. Paul
St. Luke's Hospital	Kansas City, Mo.
*Englewood Hospital	Englewood, N. J.
St. Mary's Hospital	Brooklyn
Emergency Hospital of the Sisters of Charity	Buffalo
*Cornell University Infirmary	Ithaca, N. Y.
*Mercy Hospital	Toledo, Ohio
*Bradford Hospital	Bradford, Pa.
*Harrisburg Polyclinic Hospital	Harrisburg, Pa.
Columbia Hospital	Columbia, S. C.
Greenville General Hospital	Greenville, S. C.
*St. Joseph Hospital	Memphis, Tenn.
*Holy Cross Hospital	Salt Lake City
St. Mary's Hospital	Madison, Wis.

Neurological Surgery

Veterans Admin. Hospital	Van Nuys, Calif.
Veterans Admin. Hospital	New York City
*Veterans Admin. Hospital	Memphis, Tenn.
Duke Hospital	Durham, N. C.
*Mercy Hospital	Pittsburgh

Neurology

*Fitzsimmons General Hospital	Denver
*Freedmen's Hospital	Washington, D. C.
*Veterans Admin. Hospital	Los Angeles
*Veterans Admin. Hospital	Coatesville, Pa.
*Ochsner Foundation Hospital	New Orleans
*St. Louis City Hospital	St. Louis
*Graduate Hospital of the University of Pennsylvania	Philadelphia

Obstetrics-Gynecology

*Herrick Memorial Hospital (ObG)	Berkeley, Calif.
*St. Vincent's Hospital (ObG)	Indianapolis
Swedish Hospital (Ob)	Minneapolis
*Unity Hospital (ObG)	Brooklyn
Ellis Hospital (Ob)	Schenectady, N. Y.
Columbia Hospital (ObG)	Columbia, S. C.
Methodist Hospital (ObG)	Dallas, Texas
Arlington Hospital (Ob)	Arlington, Va.

Ophthalmology

Veterans Admin. Hospital	Wadsworth, Kan.
*Veterans Admin. Hospital	Oklahoma City
*New Haven Unit, Grace-New Haven Community Hospital	New Haven, Conn.
Beth Israel Hospital	New York City
*Cleveland Clinic Hospital	Cleveland

Orthopedic Surgery

White Memorial Hospital	Los Angeles
Illinois Masonic Hospital	Chicago
Reading Hospital	Reading, Pa.
Columbia Hospital	Columbia, S. C.
Greenville General Hospital	Greenville, S. C.
Salt Lake General Hospital (In affiliation with Veterans Admin. Hospital and Shriners Hospital for Crippled Children)	Salt Lake City

Otolaryngology

Veterans Admin. Hospital	McKinney, Texas
*New York Hospital	New York City

Pathology

U. S. Marine Hospital	Seattle
Veterans Admin. Hospital	Chamblee, Ga.
Veterans Admin. Hospital	Framingham, Mass.
Veterans Admin. Hospital	Minneapolis
Veterans Admin. Hospital	Jefferson Barracks, Mo.
Veterans Admin. Hospital	Nashville, Tenn.
Veterans Admin. Hospital	Dallas, Texas
Veterans Admin. Hospital	McKinney, Texas
Veterans Admin. Hospital	Salt Lake City
Glendale Sanitarium and Hospital	Glendale, Calif.
Stamford Hospital	Stamford, Conn.
Waterbury Hospital	Waterbury, Conn.
Eastern Maine General Hospital	Bangor, Maine
Lawrence General Hospital	Lawrence, Mass.
Menorah Hospital	Kansas City, Mo.
Mountainside Hospital	Montclair, N. J.
Burlington County Hospital	Mount Holly, N. J.
Hospital of St. Barnabas and for Women and Children	Newark, N. J.
Mercer Hospital	Trenton, N. J.
Charles S. Wilson Memorial Hospital	Johnson City, N. Y.
St. John's Long Island City Hospital	Long Island City, N. Y.
Huron Road Hospital	East Cleveland, Ohio
Providence Hospital	Portland, Ore.
Hamot Hospital	Erie, Pa.
Methodist Hospital	Memphis, Tenn.
Dr. W. H. Groves Latter-Day Saints Hospital	Salt Lake City
Holy Cross Hospital	Salt Lake City
De Paul Hospital	Norfolk, Va.
University Hospital	San Juan, P. R.

Pediatrics

*Brooke General Hospital	San Antonio, Texas
*University Hospital	Little Rock, Ark.
*Mary Imogene Bassett Hospital	Cooperstown, N. Y.

Physical Medicine

*Veterans Admin. Hospital	Fort Logan, Colo.
*Veterans Admin. Hospital	Cleveland
*Rehabilitation Hospital	West Haverstraw, N. Y.

Proctology

*Temple University Hospital	Philadelphia

Psychiatry

*Fitzsimmons General Hospital	Denver
*Veterans Admin. Hospital	Gulfport, Miss.
*Veterans Admin. Hospital	Jefferson Barracks, Mo.
*Veterans Admin. Hospital	Tomah, Wis.
*Pasadena Sanitarium	South Pasadena, Calif.
*Pacific Colony	Spadra, Calif.
*George Washington University Hospital	Washington, D. C.
*Anna State Hospital	Anna, Ill.
*Dixon State Hospital	Dixon, Ill.
*Ochsner Foundation Hospital	New Orleans
*St. Joseph's Retreat	Dearborn, Mich.
*Ionia State Hospital	Ionia, Mich.
*Newberry State Hospital	Newberry, Mich.
*Long Island Home	Amityville, N. Y.
*Vanderbilt University Hospital	Nashville, Tenn.

Pulmonary Diseases

*Veterans Admin. Hospital	Fort Logan, Colo.
*Veterans Admin. Hospital	Staten Island, N. Y.
*Tulare-Kings Counties Joint Tuberculosis Hospital	Springville, Calif.
*Bergen Pines, Bergen County Hospital	Ridgewood, N. J.
*North Carolina Sanatorium for the Treatment of Tuberculosis	McCain, N. C.
*Mahoning Tuberculosis Sanatorium	Youngstown, Ohio

Radiology

*Children's Hospital (Rad.)	San Francisco
*St. Luke's Hospital (Rad.)	Duluth, Minn.
*Evangelical Deaconess Hospital (D.R.)	Milwaukee

Urology

*Fitzsimmons General Hospital	Denver
*Oliver General Hospital	Augusta, Ga.
*U. S. Marine Hospital	Stapleton, S. I., N. Y.
*Veterans Admin. Hospital	Oakland, Calif.
*Veterans Admin. Hospital	Newington, Conn.
Veterans Admin. Hospital	Wadsworth, Kan.
Veterans Admin. Hospital	Minneapolis
*Veterans Admin. Hospital	Albuquerque, N. M.
*Veterans Admin. Hospital	Lincoln, Neb.
*Norwood Hospital	Birmingham, Ala.
San Diego County General Hospital	San Diego, Calif.
*Harbor General Hospital	Torrance, Calif.
Duval County Hospital	Jacksonville, Fla.
*Provident Hospital	Chicago
*Louisville General Hospital	Louisville, Ky.
*Shreveport Charity Hospital	Shreveport, La.
*Mount Auburn Hospital	Cambridge, Mass.
*Missouri Baptist Hospital	St. Louis
*Orange Memorial Hospital	Orange, N. J.
Jewish Hospital	Brooklyn
*Methodist Hospital	Brooklyn
Hillcrest Memorial Hospital	Tulsa, Okla.

* Indicates temporary approval.

ADDITIONAL INTERNSHIPS APPROVED

Tripler General Hospital	Honolulu	Lutheran Deaconess Home & Hosp.	Minneapolis
U. S. Naval Hospital	Agana, Guam	Mississippi Baptist Hospital	Jackson, Miss.
St. Mary's Hospital and Sanitarium	Tucson	Mercy Hosp.-Street Memorial	Vicksburg, Miss.
St. Vincent's Hospital	Los Angeles	Overlook Hospital	Summit, N. J.
Harbor General Hospital	Torrance, Calif.	St. Francis Hospital	Poughkeepsie, N. Y.
Mercy Hospital	Davenport, Iowa	St. Joseph's Hospital	Syracuse, N. Y.
Baptist Hospital	Alexandria, La.	De Paul Hospital	St. Louis, Mo.
Peninsula General Hospital	Salisbury, Md.	Grand Forks Deaconess Hosp.	Grand Forks, N. D.
Brockton Hospital	Brockton, Mass.	Bethesda Hospital	Cincinnati, Ohio
Abbott Hospital	Minneapolis	Flower Hospital	Toledo, Ohio
Riverside Hospital	Toledo, Ohio		
St. Vincent's Hospital	Portland		
Doctors Hospital	Philadelphia		
Sacred Heart Hospital	Yankton, S. D.		
Fort Sanders Hospital	Knoxville		
St. Joseph's Infirmary	Houston		
Arlington Hospital	Arlington, Va.		
Bluefield Sanitarium	Bluefield, W. Va.		
St. Joseph's Hospital	Marshfield, Wis.		
San Juan City Hospital	San Juan, P. R.		

POSTGRADUATE AND CONTINUATION COURSES FOR PHYSICIANS

Since 1937 the Council on Medical Education and Hospitals has published periodically in THE JOURNAL lists of postgraduate continuation courses offered by educational institutions throughout the country. These listings include courses of a review and refresher nature as well as formal basic science courses in preparation for specialty board certification. The courses are for variable periods from a few days to a year or longer. Some are concentrated full time courses and others are part time. In the June 19, 1948 issue of THE JOURNAL more than 850 courses covering the period from July 1, 1948 to Jan. 15, 1949 are listed. Interest in postgraduate courses is at an all time peak and appears still to be increasing. During the year July 1, 1947 to June 30, 1948 a total of 1,800 courses were offered. This represented an increase of 437 over the preceding annual period. State medical societies, medical schools, hospitals, state and city boards of health and special societies continue to be active in providing leadership in developing this increasingly popular undertaking in medical education. Institutions offering this type of training are invited to announce such courses in the semiannual lists compiled by the Council.

With the exception of the formal basic science courses, these continuation or review courses are not designed to prepare physicians for certification in the specialties by the American boards. Some opportunities are offered, however, for review work in preparation for the examinations of the specialty boards. Many are applicable to the educational benefits provided physician veterans.

In the following paragraphs mention is made of some of the recent and noteworthy developments in post-

graduate education. An analysis of the courses offered during the period July 1, 1947 to July 1, 1948 is also presented.

Recent Developments

Cancer symposiums extending over several days are being sponsored in the metropolitan and nonmetropolitan areas of California by the county medical societies, the Cancer Commission of the California Medical Association, the State Department of Public Health and the California Division of the American Cancer Society.

The Section of Maternal and Child Health of the Louisiana State Department of Health has developed refresher courses in obstetrics and pediatrics in cooperation with the medical schools in New Orleans. The courses covered two weeks, each course being limited to twenty physicians. Tuition, transportation and expenses were paid by the State Health Department.

Postgraduate courses in pediatrics of two weeks' duration, designed primarily for physicians in general practice, are offered every month to physicians in Michigan without charge through the cooperation of the Michigan Department of Health, the Michigan State Medical Society and the departments of pediatrics and postgraduate medicine of the University of Michigan.

Postgraduate instruction throughout the state of New York is arranged by the Council Committee on Public Health and Education of the Medical Society of the State of New York with the cooperation of the New York State Department of Health.

A series of educational exercises consisting of clinics and pathologic conferences at hospitals throughout the state are regularly scheduled by the Rhode Island Medical Society. All members of the society are privileged to attend.

A course in physical medicine and rehabilitation was conducted by the University of Texas Medical Branch. The course was designed for the general practitioner and specialist interested in the more effective use of physical medicine and included a roster of twenty recognized authorities as guest speakers. Instruction was provided in the theory and technic of application of the various physical agents, as well as demonstrations and motion pictures.

The American Academy of Ophathalmology and Otolaryngology conducts home study courses for graduates in medicine who are practicing or are preparing to take up the practice of these specialties.

The American Urological Association is establishing courses of graduate instruction in urology. These courses are to be given in eight or ten areas in various parts of the country and will cover a series of daily lectures over a period of a week. Emphasis will be placed on the basic sciences and their application to the problems of urology. The first course arranged will be given in November at the College of Medical Evangelists under the auspices of the Los Angeles Urological Society.

Analysis of Courses Offered in 1947-1948

In presenting this analysis of postgraduate courses which have been offered during the annual period July 1, 1947 to June 30, 1948 the statistical summaries are divided into three groups. Short review courses of five days or less are discussed, followed by courses of more than five days' duration and, lastly, a group including clinical conferences, graduate assemblies, study courses and courses of a chautauqua nature.

Short Review Courses.—Thirty-one states and the District of Columbia provided opportunities of five days' duration or less for physicians to continue professional study in or near their home communities. There were 496 courses given in these states as follows:

Alabama	2	Minnesota	8
Arizona	1	Missouri	9
California	67	New York	105
Colorado	6	North Carolina	6
Connecticut	11	North Dakota	1
District of Columbia	3	Ohio	10
Florida	2	Oklahoma	20
Georgia	2	Oregon	1
Illinois	18	Pennsylvania	75
Indiana	13	South Carolina	2
Iowa	13	Tennessee	10
Kansas	22	Texas	11
Kentucky	6	Vermont	3
Louisiana	6	Virginia	6
Massachusetts	9	Washington	1
Michigan	25	Wisconsin	30
Total			496

TABLE 21.—*Courses Offered and Attendance*

	1945-1946			1946-1947			1947-1948		
	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance	Total Courses	Number Reporting Attendance	Attendance
Short review courses (5 days or less)	154	128	4,140	239	205	16,274	496	478	31,569
Courses of less than a year and more than 5 days	1,070	1,042	19,901	1,291	1,137	23,062	1,279	1,181	24,878
Clinical conferences, graduate assemblies, study and chautauqua courses	52	52	21,824	21	21	20,475	25	25	26,350
Totals	1,276	1,222	45,935	1,551	1,363	59,811	1,800	1,686	82,800

The subjects of these 496 courses included:

Allergy	Malignant diseases
Anatomy	Medicine, general
Anesthesiology	Neurology and psychiatry
Arthritis	Obstetrics and gynecology
Bacteriology	Ophthalmology
Basic sciences	Orthopedic surgery
Biochemistry	Otolaryngology
Cardiovascular disease	Otology
Chest diseases	Otorhinolaryngology
Dermatology and syphilology	Pathology
Diabetes	Pediatrics
Electrocardiography	Physical medicine
Electroencephalography	Physiology
Endocrinology	Poliomyelitis
Endoscopy	Proctology
Fractures	Public health
Gastroenterology	Radiology
Genetics and anthropology	Surgery, general
Hematology	Therapy
Industrial health	Urology
Internal medicine	Venereal disease

The courses varied in length from sessions of one-half hour to five days' full time and consisted of organized courses, daily set clinics on patients in the wards and evening lectures with emphasis on recent developments. Of the 496 courses reported, 125 covered five days' full time, 65 were four day courses, 59 were three day courses, 49 two days and 43 one full day. In 60 instances the length of the course was variable. The remainder of the courses were reported by lectures, sessions or hours. The type of instruction was didactic,

clinical or both. The instructors were chosen from physicians practicing in the state in which the courses were offered as well as from out of the state. Medical school faculty members participated in 178 of the courses. The facilities used included hospitals, clinics, medical schools and hotels.

These offerings were held in every month, the majority being given in January, March, September and October. Thirty-two were offered continuously throughout the year, while 52 were arranged at the convenience of the applicant. Fifty-five were available for specialists only. Fees ranged from $3 to $300. The majority were less than $50. For 84 courses no fee was charged.

The attendance reported for 478 courses was 31,569. For 18 courses no enrolment figures were compiled.

This type of instruction is in great demand, as evidenced by the fact that the attendance almost doubled the reported attendance last year.

Courses of More than Five Days.—In centers where ample clinical facilities are available, 1,279 graduate courses of more than five days' duration were offered in thirty-four states and the District of Columbia during 1947-1948. These states and the number of courses which were given in each state are as follows:

Arkansas	3	Mississippi	2
California	64	Missouri	6
Colorado	6	Nebraska	5
Connecticut	19	New Jersey	2
District of Columbia	47	New York	313
Florida	2	North Carolina	1
Georgia	10	Ohio	4
Illinois	191	Oklahoma	4
Indiana	3	Oregon	19
Iowa	12	Pennsylvania	64
Kansas	6	South Carolina	2
Kentucky	3	Tennessee	5
Louisiana	16	Texas	16
Maryland	6	Vermont	4
Massachusetts	136	Virginia	7
Michigan	86	Washington	8
Minnesota	11	Wisconsin	12
Total			1,279

These courses consisting of refresher courses of more than five days to intensive courses extending over one year were offered in the following subjects:

Allergy	Medicine, general
Anatomy	Neurology and psychiatry
Anesthesiology	Nutrition
Arthritis	Obstetrics and gynecology
Bacteriology	Ophthalmology
Basic sciences	Orthopedic surgery
Biochemistry	Otolaryngology
Cardiovascular disease	Otorhinolaryngology
Chemistry	Otology
Chest diseases	Pathology
Dermatology and syphilology	Pediatrics
Diabetes	Pharmacology
Electrocardiography	Physical medicine
Electroencephalography	Physiological chemistry
Endocrinology	Physiology
Endoscopy	Poliomyelitis
Fractures	Proctology
Gastroenterology	Public health
Hematology	Radiology
Industrial health	Surgery, general
Internal medicine	Therapy
Legal medicine	Urology
Malignant diseases	Venereal disease

The length of the full time courses varied from six days to one month for 425 courses. There were offered 234 courses ranging in length from one to four months and 224 from five to twelve months. There were 16 one year courses and 2 each given for two and three years. The remainder (376) specified the length of the course in hours, sessions, seminars, semesters or quarters.

The description of these intensive courses indicated that instruction was both clinical and didactic. Instruction was both didactic and clinical for 604 courses, didactic only for 81 and clinical only for 86. The remainder did not specify the type of instruction.

In presenting these courses, hospital facilities were used for 744 courses, medical schools for 571 courses and clinics for 425. In many instances two or all three of these sources were used in presenting an individual course. Hotel and other facilities were used for 89 courses.

The faculties of medical schools served as instructors in 472 courses. Additional instructors were specialists in their field, chosen mainly (in 558 instances) from physicians residing within the state in which the course was given, but included also physicians from outside the state.

Courses were offered during every month, and in 44 instances they were arranged to suit the convenience of physician-students. There were 95 courses given for specialists only. Fees varied from $1 to $1,000. For 43 courses no fee was charged.

The attendance reported for 1,183 of the 1,279 courses given in 1947-1948 was 24,878.

Sponsoring and Contributing Agencies.—One hundred and ninety-four agencies participated in the sponsoring of both the short review courses and the longer courses. These included 59 medical schools, 43 special societies, 29 hospitals, 22 state societies, 10 graduate schools of medicine, 14 county societies, 13 state health departments, 3 universities and the United States Public Health Service.

Seventeen agencies, while not responsible for the development of these opportunities, were reported as contributing agencies. These included the W. K. Kellogg Foundation, the Commonwealth Fund, Veterans Administration, Rockefeller Foundation and the National Foundation for Infantile Paralysis.

Clinical Conferences, Graduate Assemblies, Study Courses and Chautauqua Courses.—In fifteen states, there were twenty-five such opportunities offered. This type of training varied in length from one day sessions to two weeks for conferences, assemblies and study courses. In eight states, chautauqua courses were held at various times throughout the states in from four to twelve centers. Contributing agencies were speakers' bureaus, medical schools, state and county medical societies, state health departments and special societies. The majority surveyed topics in general medicine and surgery. Other subjects covered were pediatrics, ophthalmology and otolaryngology, psychosomatic medicine, obstetrics and gynecology. Instruction was both didactic and clinical. The facilities of hospitals, clinics and medical schools were used. For this type of instruction no fee was charged or a small registration fee. The attendance numbered 26,356.

Summary.—In thirty-five states and the District of Columbia some form of continuation study for practicing physicians was provided during 1947-1948. Table 21 summarizes the recorded enrolment for the year with comparative figures for two preceding years. The total for last year (82,803) represents the greatest number to seek such training in a given year. It exceeded the attendance during 1946-1947 by 22,992 and that of the year 1945-1946 by 36,848.

The offering of such opportunities to an increasing extent, as presented by these figures, indicates an extensive expansion and use of facilities of medical schools and hospitals. It represents also the desires of almost half of the entire physician population to improve their knowledge of newer technics of practice in a single year. Great credit is due all who participate in this remarkable program to improve the care of the people of our country.

APPROVED MEDICAL SCHOOLS IN THE UNITED STATES

ALABAMA

Birmingham

Medical College of Alabama.—Established in 1943 as a division of the University of Alabama. Located in Birmingham in 1944. In 1945 assumed title to Jefferson Hospital and Hillman Hospital, Birmingham. The Medical College of Alabama cares for all indigent patients of the county and city, maintenance of which is paid to the university on a per diem basis by the county. In 1943 appropriation included one million dollars for the building of a new medical school which will be erected as early as possible, and temporary quarters are now in the Jefferson-Hillman Hospital. First instruction in the Medical College of Alabama started June 4, 1945, with a junior class and this class was graduated in October, 1946. On October 8, 1945, the School of the Basic Medical Sciences on the University Campus, established in 1920, and its faculty, was absorbed into the new Medical College of Alabama. The medical college is coeducational. Minimum entrance requirements are three years of college work. Tuition is as follows: for legal residents of Alabama $400 per academic year plus incidental fees of $20. Nonresidents of the state are charged an additional $100 each session. The registration for the 1947-1948 session was 132. No senior class was in session. The last session began Oct. 6, 1947 and ended June 12, 1948. The next session for all four classes will start Sept. 13, 1948, and will end June 7, 1949. The Dean is Roy R. Kracke, M.D.

ARKANSAS

Little Rock

University of Arkansas School of Medicine, 1209 McAlmont Street. —Organized in 1879 as the Medical Department of Arkansas Industrial University. Present title in 1899. In 1911 the College of Physicians and Surgeons united with it and it became an integral part of the University of Arkansas. The first class was graduated in 1880. Clinical teaching was suspended in 1918 but resumed in 1923. Coeducational since organization. The curriculum covers four sessions of nine months each. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. The fees for the four years for residents of Arkansas are $380 a year; nonresidents are charged $505 a year. The registration for the 1947-1948 session was 274; graduates 55. The last session began Sept. 21, 1947, and ended June 18, 1948. The next session will begin Sept. 27, 1948, and will end June 17, 1949. The Dean is Joseph T. Roberts, M.D.

CALIFORNIA

Berkeley-San Francisco

University of California Medical School, University Campus, Berkeley; Medical Center, San Francisco 22.—Organized in 1864 as the Toland Medical College. The first class graduated in 1864. In 1873 it became the Medical Department of the University of California. In 1909, by legislative enactment, the College of Medicine of the University of Southern California, at Los Angeles, became a clinical department but was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided. Coeducational since organization. Three years of collegiate work are required for admission. The work of the first year is given at Berkeley and that of the last three years at San Francisco. The medical course consists of four academic years, each containing two semesters of sixteen weeks each. The fees are $320 per academic year. Nonresidents are charged $250 additional each year. The registration for the 1947-1948 session was 283; graduates 68. The last session began Sept. 22, 1947 and ended June 17, 1948. The next class will begin Sept. 13, 1948 and will end June 16, 1949. The Dean is Francis Scott Smyth, M.D., San Francisco.

Loma Linda-Los Angeles

College of Medical Evangelists, Loma Linda; Boyle and Michigan Avenues, Los Angeles 33.—Organized in 1909. The first class graduated in 1914. The laboratory departments are at Loma Linda; the clinical departments at Los Angeles. Coeducational since organization. Three years of collegiate work are required for admission. The freshman, sophomore and junior years consist of nine month academic sessions and the senior year will have in addition to the nine month session a seven weeks' clinical clerkship during the summer between the junior and senior years. A twelve month internship in an approved hospital is required. The yearly tuitions including fees are respectively, $730, $719, $737 and $745. The registration for 1947-1948 was 319; graduates 87. The last session for freshman, sophomore and junior students began on Sept. 21, 1947 and ended June 30, June 30 and June 11, 1948, respectively. The senior session began June 22, 1947 and was completed June 13, 1948. The next session for freshman and sophormore students will begin Sept. 12, 1948, junior students Sept. 19, 1948 and senior students June 13, 1948 and will end June 16, June 23, June 10, and June 12, 1949 respectively for the four classes. The president is George T. Harding, M.D., Los Angeles. The deans are Harold Shryock, M.D., Loma Linda, and W. F. Norwood, Ph.D., Los Angeles.

Los Angeles

University of Southern California School of Medicine, 3551 University Avenue, Zone 7.—Organized in 1895 as the University of Southern California College of Medicine. First class graduated in 1898. In 1908 it became the Los Angeles Medical Department of the University of California. In 1909 the College of Physicians and Surgeons, established in 1904, became the Medical Department of the University of Southern California. Its activities were suspended in 1920; reorganized in May 1928, under present title. Entrance requirements are approximately 90 semester hours. An internship is required for graduation. Coeducational since organization. Annual fees amount to approximately $690. The registration for 1947-1948 was 251; graduates 58. The last session began Sept. 15, 1947 and ended June 12, 1948. The next session will begin Sept. 13, 1948 and will end June 11, 1949. The Dean is Burrell O. Raulston, M.D.

Stanford University-San Francisco

Stanford University School of Medicine, University Campus, Stanford University; 2398 Sacramento Street, San Francisco. The main buildings are in San Francisco. The laboratories of anatomy, bacteriology and experimental pathology, chemistry and physiology are located on the campus at Stanford University, which is thirty miles southeast of San Francisco adjoining the City of Palo Alto. The post office is Stanford University. Organized in 1908, when by agreement the interests of Cooper Medical College were taken over. The first class graduated in 1913. Coeducational since organization. Three years of collegiate work are required for admission. The quarter plan is in operation. An internship is a requirement for graduation. The average fee for each of the four years is $699. The registration for 1947-1948 was 242; graduates 57. The last session for all classes began Sept. 29, 1947 and ended June 9, 1948. The next session will begin Sept. 27, 1948 and will end June 15, 1949. The Dean is Loren R. Chandler, M.D.

COLORADO

Denver

University of Colorado School of Medicine, 4200 East Ninth Avenue.—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911. Coeducational since organization. The entrance requirements are ninety semester hours of collegiate work. The fees average $450 per academic year. Nonresidents are charged $225 additional each year. The registration for 1947-1948 was 233; graduates 52. The last session began Sept. 29, 1947 and ended June 14, 1948. The next session will begin Sept. 27, 1949 and will end June 13, 1949. The Dean is Ward Darley, M.D.

CONNECTICUT

New Haven

Yale University School of Medicine, 333 Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. Coeducational since 1916. The requirements for admission are three years collegiate work. The fees average $750 per academic year. The registration for 1947-1948 was 222; graduates 55. The last session began Sept. 22, 1947 and ended June 16, 1948. The next session will commence Sept. 22, 1948 and will end June 16, 1949. The Dean is C. N. H. Long, M.D.

DISTRICT OF COLUMBIA

Washington

Georgetown University School of Medicine, 3900 Reservoir Road, N. W., Zone 7.—Organized in 1851. First class graduated in 1852. The degree of Bachelor of Arts or Bachelor of Science or its equivalent from an approved college of arts and sciences is required for admission of non-veterans, but veterans may be admitted with a minimum of 90 semester hours of credit. The fees average $635 per academic year. Registration for 1947-1948 was 369, graduates 75. The last session for freshmen and sophomores began Sept. 22, 1947 and ended May 29, 1948; the junior class began Sept. 22, 1947 and ended May 21, 1948 and the senior class began Sept. 22, 1947 and ended June 14, 1948. The next session for freshmen and sophomores will begin Sept. 20, 1948 and will end May 28, 1949, the juniors will be in session from Aug. 30, 1948 to May 28, 1949; the senior session began June 1, 1948 and will end June 13, 1949. The Dean is Rev. Paul A. McNally, S.J., Ph.D.

George Washington University School of Medicine, 1335 H Street, N. W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name "National Medical College." Classes were graduated in 1826 and in all subsequent years except in 1834-1838 and 1861-1863 inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it

absorbed the National University Medical Department. In 1904 by an Act of Congress the title of George Washington University was granted to the institution. Coeducational since 1884. Ninety semester hours of college work are required for admission. The fees average $600 per academic year. The registration for 1947-1948 was 315; graduates 80. The last session began Sept. 15, 1947 and ended May 26, 1948. The next session will begin Sept. 20, 1948 and will end June 1, 1949. The Dean is Walter A. Bloedorn, M.D.

Howard University College of Medicine, Fifth and W Streets, N. W. —Chartered in 1867. Organized in 1869. The first class graduated in 1871. Coeducational since organization. Negro students compose a majority of those in attendance. The admission requirements are at least two years of collegiate work. The course covers four years of thirty-three weeks each. The fees are, respectively, $352.50; $347.50; $337.50; $337.50. The registration for 1947-1948 was 274; graduates 64. The last session began Sept. 27, 1947 and ended June 4, 1948. The next session will begin Sept. 25, 1948 and will end June 3, 1949. The Dean is Joseph L. Johnson, M.D.

GEORGIA

Augusta

University of Georgia School of Medicine, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1929. After 1873 it was known as the Medical Department of the University of Georgia. On July 1, 1933, the name was changed to the University of Georgia School of Medicine. Property transferred to the University in 1911. Classes were graduated in 1833 and all subsequent years except 1862 and 1863. Coeducation was begun in 1920. Three years of collegiate work are required for admission. The fees average $225 per academic year for residents of Georgia, nonresidents $525. Only bona fide residents of Georgia admitted (with exception of A.S.T. and V-12 Program students during World War II). The registration for the 1947-1948 session was 290; graduates 66. The 1947-1948 session for the senior class began April 3, 1947 and ended March 22, 1948; the freshman, sophomore and junior classes began September 11, 1947 and ended June 19, 1948. The next session will begin Sept. 9, 1948 and will end June 20, 1949. The Dean is G. Lombard Kelly, M.D.

Emory University

Emory University School of Medicine.—Organized in 1854 as the Atlanta Medical College. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. A class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with Atlanta School of Medicine (organized in 1905), reassuming the name of Atlanta Medical College. Became the School of Medicine of Emory University in 1915. Three years of collegiate work are required for admission. The course of study is four academic years; 34 weeks each in the 1st and 2nd years; 36 weeks in the 3rd year; 40 weeks in the 4th year. The fees for each of the four academic years are $600. The registration for 1947-1948 was 210; graduates 48. The last session for freshmen and sophomores began Sept. 18 and 22, 1947 and ended June 5, 1948; the last session for juniors began Sept. 2, 1947 and ended June 5, 1948; the last session for seniors began Aug. 1, 1947 and ended June 5, 1948. The next session for freshmen and sophomores will begin Sept. 23 and 27, 1948 and will end June 4, 1949; the next session for the junior class will begin Sept. 7, 1948 and will end June 4, 1949; the senior session began Aug. 2, 1948 and will end June 4, 1949. The Dean is R. Hugh Wood, M.D.

ILLINOIS

Chicago

Northwestern University Medical School, 303 East Chicago Avenue. —Organized in 1859 as the Medical Department of Lind University. First class graduated in 1868. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869 but retained the name of Chicago Medical College until 1891, when the present title was taken. Became an integral part of Northwestern University in 1905. Coeducational since 1926. The requirement for admission is 85 semester hours of collegiate work. The B.S. in medicine degree may be conferred before the end of the senior year. A hospital internship is required for graduation. The total fees are $680 each year. The registration for 1947-1948 was 520; graduates 143. The last session began Sept. 26, 1947 and ended June 12, 1948. The next session will begin Sept. 24, 1948 and will end June 11, 1949. The Dean is J. Roscoe Miller, M.D.

Stritch School of Medicine of Loyola University, 706 South Wolcott Avenue—Organized in 1915 by acquisition of Bennett Medical College which had been organized in 1869. Facilities enlarged by the acquisition of Chicago College of Medicine and Surgery. Faculties in basic sciences put on full time basis and assumed name of Loyola University School of Medicine in 1917. Operated as an organic part of Loyola University. Name officially changed to Stritch School of Medicine of Loyola University on April 15, 1948. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. The fees for the academic year beginning Sept. 27, 1948 will be $675. The registration for 1947-1948 was 277; graduates 67. The last session for freshmen, sophomores and juniors began Sept. 22, 1947 and ended June 26, 1948; the session for seniors began April 9, 1947 and ended March 23, 1948. The next session for freshmen, sophomores and juniors will begin Sept. 27, 1948 and will end June 25, 1949. The next session for seniors will begin Sept. 13, 1948 and will end June 4, 1949. The Dean is James J. Smith, M.D.

University of Chicago, The School of Medicine, Fifty-Eighth Street and Ellis Avenue.—Organized in 1924, as a part of the Ogden Graduate School of Science of the University of Chicago. In 1932, when the University of Chicago reorganized its departments, the medical departments were included in the Division of Biological Sciences. The work the first two years in the medical courses has been given on the University Quadrangles since 1899; but the last two years were offered only at Rush Medical College which was affiliated with the university until 1927 when actual work in the clinical departments on the campus began. After that time candidates for the degree of Doctor of Medicine could take the work of the first two years on the campus and the work of the third and fourth years either on the campus or at the Rush Medical College. In June 1940 Rush Medical College became affiliated with the University of Illinois College of Medicine. All undergraduate instruction is now given only on the campus of the University of Chicago. The requirements for admission are 90 semester hours of collegiate work. The B.S. degree may be obtained during the second year. The curriculum covers twelve quarters of work. Seventy-two students are admitted to the first year class each year. The tuition fee averages $690. The registration for 1947-1948 was 232; graduates, 51. Quarters begin in March, June, September and December of each year. All correspondence relating to general policies should be addressed to A. C. Bachmeyer, M.D., Associate Dean of the Biology Division, and that pertaining to student affairs to F. J. Mullin, Ph.D., Dean of Students.

University of Illinois College of Medicine, 1853 West Polk Street, Zone 12.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897. Relationship with the university was canceled in June 1912, and was restored in March 1913, when the present title was assumed. The staff of the Rush Medical College was incorporated in the University of Illinois College of Medicine in 1942 and at the same time Presbyterian Hospital, Chicago, became a teaching unit of the university. Coeducational since 1898. Three years of collegiate work are required for admission. The B.S. in medicine degree may be conferred at the end of the second year. The fees for residents of Illinois average $292 per academic year; nonresidents pay an additional fee of $150. The registration for the 1947-1948 session was 634; graduates, 147. The last session began Sept. 29, 1947 and ended June 17, 1948. The next session will begin Sept. 27, 1948 and will end June 17, 1949. The Dean is John B. Youmans, M.D.

INDIANA

Bloomington-Indianapolis

Indiana University School of Medicine, Bloomington; 1040 West Michigan Street, Indianapolis.—Organized in 1903 but did not give all the work of the first two years of the medical course until 1905. In 1907 by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. Coeducational since organization. The B.S. degree in anatomy and physiology is conferred. Three years of college work are required for admission. The work of the first two semesters is given at Bloomington; the remainder of the work at Indianapolis. Regular fee for two semesters of work is $221 for residents of Indiana and $426 for nonresidents. The registration for the 1947-1948 session was 396; graduates 84. The last session began Sept. 22, 1947 and ended June 10, 1948. The next session will begin Sept. 20, 1948 and will end June 12, 1949. The Dean is John D. Van Nuys, M.D., Indianapolis.

IOWA

Iowa City

State University of Iowa College of Medicine, University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. Coeducational since 1870. Three years of collegiate work are required for admission. The B.A. degree in the combined course of liberal arts and medicine is conferred. The tuition fee is $230 each year for residents of Iowa and $490 for nonresidents. The registration for 1947-1948 was 278; graduates 57. The last session for freshmen, sophomores and juniors began Sept. 22, 1947 and ended June 5, 1948; the last session for seniors began March 24, 1947 and ended March 13, 1948. The next session will begin Sept. 23, 1948 and will end on June 10, 1949. The Dean is Mayo Hamilton Soley, M.D.

KANSAS

Lawrence-Kansas City

University of Kansas School of Medicine, Lawrence; 39th Street and Rainbow Boulevard, Kansas City.—Organized in 1880. It offered only the first two years of the medical course until 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and the Medico-

Chirurgical College, founded in 1897. Absorbed Kansas Medical College of Topeka in 1913. The first class graduated in 1906. The clinical courses are given in Kansas City. At present the first year and one-half of the medical course is given on the University campus at Lawrence, Kansas. The class is transferred to the Kansas City, Kansas, campus in the middle of the second year where the balance of the course is given. Coeducational since 1890. The requirement for admission is three years of collegiate work. The fees are $300 per year; the nonresident fees are $600 per year. The registration for 1947-1948 was 308; graduates 56. The last session began Sept. 17, 1947 and ended June 3, 1948. The next freshman and sophmore classes will begin Sept. 20, 1948 and end June 2, 1949. The session for the junior and senior classes began June 14, 1948 and will end June 2, 1949 with three-fourths of each class in school all the time and one-fourth on vacation each quarter. The Dean is Franklin D. Murphy, M.D., Kansas City.

KENTUCKY

Louisville

University of Louisville School of Medicine, 101 West Chestnut Street, Zone 2.—Organized in 1837 as Louisville Medical Institute. The first class graduated in 1838, and a class graduated each subsequent year except 1863. In 1846 the name was changed to University of Louisville Medical Department. In 1907 it absorbed the Kentucky University Medical Department; in 1908, the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. In 1922 it changed its name to the University of Louisville School of Medicine. Coeducational since organization. Two years of collegiate work are the minimum requirements for admission. Preference is given applicants with a degree or three college years leading to a degree. Fees are $450 for residents of Louisville and Jefferson County and $600 for nonresidents, per school year. The registration for 1947-1948 was 325; graduates 144. The school year is divided into two semesters and students are accepted for matriculation only at the beginning of the first semester. The last session began Sept. 29, 1947 and ended June 15, 1948. The next session begins on Sept. 22, 1948, and will end on June 14, 1949. The Dean is John Walker Moore, M.D.

LOUISIANA

New Orleans

Louisiana State University School of Medicine, 1542 Tulane Avenue, Zone 13.—Organized January 1931 as Louisiana State University Medical Center. Present title in 1939. Coeducational. First session October 1931 with students of first and third years. Course covers four sessions of not less than 36 weeks each. A minimum of three years collegiate work is required for admission. Total fees, $120 each year for residents of Louisiana; additional tuition of $400 each year for nonresidents. The registration for 1947-1948 was 386; graduates 98. The last session for freshman, sophomore and junior students began Sept. 4, 1947 and ended June 5, 1948; the senior session began April 9, 1947 and ended May 22, 1948. The next session for all classes will begin Sept. 7, 1948 and end June 4, 1949. The Dean is Vernon W. Lippard, M.D.

Tulane University of Louisiana School of Medicine, 1430 Tulane Avenue.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years except 1863-1865, inclusive. It became the Medical Department of the Tulane University of Louisiana in 1884. Present title in 1913. Coeducational since 1915. A minimum of three years of collegiate work is required for admission. Total fees average $650 per academic year. The registration for the 1947-1948 session was 477; graduates 97. The last session began on Sept. 2, 1947 and ended on June 2, 1948. The next session will begin Sept. 1, 1948 and will end June 1, 1949. The Dean is Maxwell E. Lapham, M.D.

MARYLAND

Baltimore

Johns Hopkins University School of Medicine, 710 North Washington Street.—The nucleus of a Medical Faculty was constituted in 1883. Systematic postgraduate instruction in pathology and bacteriology was begun in 1886. School was fully organized and opened in 1893. The first class graduated in 1897. Coeducational since organization. The requirement for admission is a college degree. The course extends over four years of eight and one-half months each. The fees average $629 per academic year. The registration for 1947-1948 was 297; graduates 78. The last session began on Sept. 29, 1947 and ended June 8, 1948. The next session will begin on Oct. 4, 1948 and will end June 14, 1949. The Dean is Alan M. Chesney, M.D.

University of Maryland School of Medicine and College of Physicians and Surgeons, Lombard and Greene Streets, Zone 1.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged with it in 1913. In 1915 the College of Physicians and Surgeons of Baltimore was merged and the present name assumed. Coeducational since 1918. Three years of college work is required for admission. The tuition fees average $513 for residents of the state; for nonresidents $150 additional. The registration for 1947-1948 was 322; graduates 77. The last session began Sept. 18, 1947 and ended June 5, 1948. The next session will begin Sept. 16, 1948 and will end June 4, 1949. The Dean is H. Boyd Wylie, M.D.

MASSACHUSETTS

Boston

Boston University School of Medicine, 80 East Concord Street, Zone 18.—Organized in 1873 as a homeopathic institution. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class was graduated in 1874. Became nonsectarian in 1918. Coeducational since organization. Applicants are required to present a minimum of three years of premedical work. Total fees average $800 per year. The registration for 1947-1948 was 235; graduates 54. The last session for freshmen, sophomores and juniors began Sept. 15, 1947 and ended June 5, 1948. The last senior class began June 16, 1947 and ended June 7, 1948. The present senior class began June 14, 1948 and will end June 6, 1949. All other classes will be enrolled Sept. 13, 1948 and the session will end May 28, 1949. The Dean is James M. Faulkner, M.D.

Harvard Medical School, 25 Shattuck Street, Zone 15.—Organized in 1782. The first class graduated in 1788. Two years of collegiate work are required for admission. The fees average $830. The registration for 1947-1948 was 504; graduates 140. The last session began Sept. 22, 1947 and ended on June 10, 1948. The next session will begin Sept. 27, 1948 and will end June 23, 1949. The Dean is C. Sidney Burwell, M.D.

Tufts College Medical School, 416 Huntington Avenue, Zone 15.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. Coeducational since 1894. A bachelor's degree is required for admission. Enrolment is generally limited to residents of the New England states. The course covers four years. The total fees for each of the four years, respectively, are $685, $680, $680, $690. The registration for 1947-1948 was 394; graduates 94. The last session for freshmen, sophomores and juniors began Sept. 24, 1947; for seniors June 9, 1947 and all classes ended June 20, 1948. The present session began for the seniors on June 14, 1948 and for the other classes will begin Sept. 22, 1948 and will end June 19, 1949. The Dean is Dwight O'Hara, M.D.

MICHIGAN

Ann Arbor

University of Michigan Medical School.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. Coeducational since 1870. The entrance requirements are ninety semester hours. The fees average $290 per academic year; for nonresidents $500 a year. The registration for 1947-1948 session was 676; graduates 132. The last session began Sept. 22, 1947 and ended June 12, 1948. The next session will begin Sept. 20, 1948 and will end June 11, 1949. The Dean is Albert C. Furstenberg, M.D.

Detroit

Wayne University College of Medicine, 1312 St. Antoine Street, Zone 1.—Organized as the Detroit College of Medicine in 1885 by consolidation of the Detroit Medical College (organized in 1868) and the Michigan College of Medicine (organized in 1879). Reorganized with the title of Detroit College of Medicine and Surgery in 1913. The first class graduated in 1869. In 1918 it became a municipal institution under the control of the Detroit Board of Education. In 1934 the name was changed by action of the Detroit Board of Education to Wayne University College of Medicine, as a part of the program of consolidation of the Detroit city colleges into a university system. Coeducational since 1917. Entrance requirement is 90 semester hours from an accredited college or university. Until further notice, enrolment is limited to residents of the State of Michigan. The fees average $525 for the school year. The registration for 1947-1948 was 226; graduates 60. The last session began Sept. 15, 1947 and ended June 12, 1948. The next session will begin Sept. 15, 1948 and will end June 18, 1949. The Dean is Hardy A. Kemp, M.D.

MINNESOTA

Minneapolis

University of Minnesota Medical School, Zone 14.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery and reorganized in 1888 by absorption of the St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1906 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. Coeducational since organization. The entrance requirements are three years of university work. Students are required to meet the requirements for a degree of B.S. or B.A. before receiving the degree of Bachelor of Medicine (M.B.), which is granted at the end of the course. The M.D. degree is conferred after a year of intern work, of advanced laboratory work, or of public health work has been completed. Total fees are $307.95 per academic year for residents and $528.95 for nonresidents. The registration for 1947-1948 was 391; graduates, 140. The last session began Sept. 29, 1947 and ended June 12, 1948. The next session will begin Sept. 27, 1948 and will end July 23, 1949. The school year of the first three years consists of fall and winter quarters of approximately 11 weeks and a spring quarter of approximately 16 weeks; in the senior year the spring quarter is 11 weeks in length and graduation is in June. The Dean is Harold S. Diehl, M.D.

MISSOURI

St. Louis

St. Louis University School of Medicine, 1402 South Grand Boulevard, Zone 4.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion-Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1902. It became the Medical School of St. Louis University in 1903. The completion of three years of college study is the minimum admission requirement but students presenting meritorious credits in excess of the minimum are accepted by preference. The fees average $611 per academic year. The registration for 1947-1948 was 432; graduates, 120. The last session began Sept. 16, 1947 and ended June 1, 1948. The next session will begin Sept. 14, 1948 and will end June 1, 1949. The Dean is Alphonse M. Schwitalla, S.J., Ph.D.

Washington University School of Medicine, Kingshighway and Euclid Avenue, Zone 10.—Organized in 1842 as the Medical Department of St. Louis University. The first class graduated in 1843. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. Coeducational since 1918. Three years of college work is required for admission. The B.S. degree in medicine is conferred at the end of the third or fourth year. The fees average $605. In 1949 the fees will be increased to $700. The registration for 1947-1948 was 360; graduates, 90. The last session began on Sept. 15, 1947 and ended June 8, 1948. The next session will begin on Sept. 13, 1948 and will end on June 7, 1949. The Dean is Robert A. Moore, M.D.

NEBRASKA

Omaha

Creighton University School of Medicine, 306 North Fourteenth Street, Zone 2.—Organized in 1892 as the John A. Creighton Medical College. The first class graduated in 1893. Present title in 1921. Coeducational since organization. Ninety semester hours of collegiate work are required for admission. The tuition fees average $625 per academic year. The registration for 1947-1948 was 244; graduates, 65. The last session began Sept. 26, 1947 and ended June 3, 1948. The next session will begin Sept. 24, 1948 and will end June 2, 1949. The Dean is Percy J. Carroll, M.D.

University of Nebraska College of Medicine, Forty-Second Street and Dewey Avenue, Zone 5.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The instruction of the first two years was given at Lincoln and of the last two at Omaha until 1913, when the work of all four years was transferred to Omaha. Coeducational since 1892. Three years of college work are required for admission. The B.S. degree in medicine is conferred at the end of the second year. The fees average $350 per academic year. The registration for 1947-1948 was 293; graduates, 67. The last session for seniors began March 26, 1947 and ended April 3, 1948. The last session for freshmen, sophomores and juniors began Sept. 15, 1947 and ended June 5, 1948. The next session will begin Sept. 13, 1948 and will end June 4, 1949. The Dean is Harold C. Lueth, M.D.

NEW YORK

Albany

Albany Medical College, 47 New Scotland Avenue.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915 Union University assumed educational control. Coeducational since 1915. The requirement for admission is three years of college work. The fees average $725 per academic year. The registration for 1947-1948 was 182; graduates 46. The last session began for the freshmen and sophomores on Sept. 29, 1947 and ended June 24, 1948 for the freshmen and June 14, 1948 for the sophomores; the last session for the juniors began April 7, 1947 and ended April 3, 1948, for the seniors June 2, 1947 to May 31, 1948. The present senior class began June 1, 1948 and will end May 31, 1949. The next session for other classes will begin Sept. 27, 1948 and will end June 13, 1949. The Dean is R. S. Cunningham, M.D.

Brooklyn

Long Island College of Medicine, 350 Henry Street, Zone 2.—Chartered in 1930, was originally organized in 1858 as the Long Island College Hospital. From the collegiate department the first class graduated in 1860 and the last class in 1930. The first class of the Long Island College of Medicine was graduated in 1931. It is coeducational. Three years of collegiate work, including specified courses, are required for admission. The fees are $715 per academic year. The registration for 1947-1948 was 404; graduates 92. The last session for seniors began Sept. 15, 1947 and ended May 29, 1948. The last session for freshmen, sophomores and juniors began on Sept. 22, 1947 and ended on June 12, 1948. The next session begins for freshmen, sophomores and juniors on Sept. 20, 1948 and ends June 10, 1949; for seniors the next session will begin Sept. 13, 1948 and will end June 8, 1949. The President is Jean A Curran, M.D. The Dean is Duncan W. Clark, M.D.

Buffalo

University of Buffalo School of Medicine, 24 High Street.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1909. Coeducational since organization. The minimum requirement for admission is three years of collegiate work including certain prescribed science subjects. The fees average $515. The registration for 1947-1948 was 273; graduates 74. The last session began on Sept. 22, 1947 and ended June 19, 1948. The next session will begin Sept. 20, 1948 and will end June 18, 1949. The Dean is Stockton Kimball, M.D.

New York

Columbia University College of Physicians and Surgeons, 630 West One Hundred and Sixty-Eighth Street.—The medical faculty of Columbia College, then known as King's College, was organized in 1767. Instruction was interruption by the War of the Revolution. The faculty was reestablished in 1792 and merged in 1814 with the College of Physicians and Surgeons, which had received an independent charter in 1807. In 1860 the College of Physicians and Surgeons became the Medical Department of Columbia College. This merger became permanent by legislative enactment in 1891. Columbia College became Columbia University in 1896. The medical school has been coeducational since 1917. Three years of collegiate work are required for admission. Fees average $650 per academic year. The registration for 1947-1948 was 432; graduates 100. The last session began on June 9, 1947 for juniors and seniors and ended on June 1, 1948. The last session for freshmen and sophomores began on Sept. 11, 1947 and ended June 1, 1948. The present session began on June 7, 1948 and June 1, 1948 respectively, for the juniors and seniors and will end June 1, 1949, and will begin on Sept. 13, 1948 for the freshmen and sophomores and will end June 1, 1949. The Dean is Willard C. Rappleye, M.D.

Cornell University Medical College, 1300 York Avenue.—Organized in 1898. Coeducational since organization. First year teaching was given formerly to approximately one third of the class at Ithaca but in 1938 this division was discontinued and all instruction is now in New York City. All students admitted are from approved colleges for premedical training. The requirement for admission is three years of college work. The fees average $700 per year. The registration for 1947-1948 was 315; graduates 78. The last session began for senior students March 31, 1947 and ended March 26, 1948. The freshman, sophomore and junior classes began Sept. 24, 1947 and ended June 17, 1948. The next session for seniors begins on July 12, and for the remaining three classes on Sept. 15 and will end June 15, 1949. The Dean is Joseph C. Hinsey, Ph.D.

New York Medical College, Flower and Fifth Avenue Hospitals, 1 East 105th Street.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title New York Homeopathic Medical College was assumed in 1869; the title New York Homeopathic Medical College and Hospital in 1887; the title New York Homeopathic Medical College and Flower Hospital in 1908; the title New York Medical College and Flower Hospital in 1936; the present title of New York Medical College, Flower and Fifth Avenue Hospitals, June 22, 1938. The first class graduated in 1861. Coeducational since 1919. Three years of college work is the minimum requirement for admission but a degree is preferred. The fees average $865 per academic year. The registration for 1947-1948 was 446; graduates 119. The last session began Sept. 15, 1947 and ended June 9, 1948. The next session will begin Sept. 20, 1948, and will end June 8, 1949. The President and Dean is F. A. W. Hetrick, M.D.

New York University College of Medicine, 477 First Avenue, Zone 16. —The Medical Department of New York University (then called the University of the City of New York) was organized in 1841 as the University Medical College. In 1898 it united with the Bellevue Hospital Medical College, organized in 1861, under the name of University and Bellevue Hospital Medical College. In 1935 the name was changed to New York University College of Medicine. In 1947 the charter of the University and the statutes were amended, establishing the New York University-Bellevue Medical Center, which includes the College of Medicine. Coeducational since 1919. Entrance requirements give preference to those who have completed not less than three full years in an approved college of arts and sciences. The fees average $650 per academic session. The registration for 1947-1948 was 487; graduates 132. The last session began Sept. 22, 1947, and ended May 22, 1948 for freshmen, sophomores and seniors, and June 12, 1948 for juniors. The next session for all classes will begin Sept. 20, 1948, and will end May 27, 1949 for freshmen and sophomores, June 17, 1949 for juniors, and May 21, 1949 for seniors. The Dean is Currier McEwen, M.D.

Rochester

University of Rochester School of Medicine and Dentistry, 260 Crittendon Boulevard, Zone 7.—Organized in 1925 as the Medical Department of the University of Rochester. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $600 per academic year. The registration for 1947-1948 was 267; graduates 66. The last session for freshmen, sophomores and juniors began Sept. 22, 1947 and ended June 19, 1948; the senior session began March 17, 1947 and ended March 27, 1948. The next session will begin on Sept. 20, 1948 and will end on June 18, 1949. The Dean is George H. Whipple, M.D.

Syracuse

Syracuse University College of Medicine, 766 Irving Avenue, Zone 10.— Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course

extended to four years in 1896. Coeducational since organization. Three years of a recognized college course are required for admission. The fees average $800 per academic year. The registration for 1947-1948 was 190; graduates 41. The last session began Sept. 5, 1947 and ended June 14, 1948. The next session for all classes will begin approximately Sept. 7, 1948 and will end June 13, 1949. The Dean is H. G. Weiskotten, M.D.

NORTH CAROLINA

Durham

Duke University School of Medicine.—Organized in 1930. The first class was admitted Oct. 1, 1930. Coeducational. The premedical requirement is three years of college work. The academic year consists of two semesters in the first year and three quarters each in the sophomore, junior and senior years. There is no summer quarter between the first and second year, but in the two clinical years the subjects of the autumn, winter and spring terms are repeated in the summer quarter. An accelerated program was adopted July 6, 1942 and starting with the summer quarter of 1946 this accelerated schedule became optional; the students may take the two semesters of their first year, and three quarters in each of their subsequent years, and receive their certificates in four calendar years, or if they receive permission from the Curriculum Committee they may at the end of their second year take the clinical quarters given during the summers and receive their certificates in three and one quarter calendar years. The B.S. degree in medicine may be conferred for special work after six quarters. Students are urged to spend three years in hospital or laboratory work after graduation and must give assurance satisfactory to the executive committee that they will spend at least two years. Active duty with the Army, Navy or Public Health Service can replace the second year. The fees are $750 for three quarters. The registration for 1947-1948 was 270; graduates 66. During 1948 the quarters begin January 5, March 30, July 5, October 4 and end March 20, June 12, Sept. 18 and Dec. 18. The next freshman class will be enrolled Oct. 4, 1948 and will end June 11, 1949. The Dean is Wilburt C. Davison, M.D.

Winston-Salem

Bowman Gray School of Medicine of Wake Forest College, Zone 7.—Organized in 1902 at Wake Forest as a school offering only the first two years of the curriculum. In 1941 the school was moved to Winston-Salem and expanded to a complete four year medical school under its present name. Coeducational. Ninety semester hours of college work are required for admission. Clinical departments operate four quarters in the year; however, the plan of operation makes it possible for students to be out of school during one quarter of each of the clinical years for research, for study elsewhere, or for earning money to help defray the expenses of their education. Tuition averages $514 per school year. The registration for 1947-1948 was 184; graduates 48. The last session for the freshman class began Sept. 29, 1947, sophomores Sept. 29, 1947, juniors and seniors March 24, 1947, and ended for freshmen and sophomores June 12, 1948, for juniors March 20, 1948, and for seniors Dec. 13, 1947. The present senior class began March 29, 1948, and will end Dec. 18, 1948. The next freshman and sophomore classes will begin Oct. 5, 1948 and will end June 11, 1949. The junior session began July 12, 1948 and will end June 11, 1949. The Dean is C. C. Carpenter, M.D.

OHIO

Cincinnati

University of Cincinnati College of Medicine, Eden and Bethesda Avenues.—Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged with the University when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. Coeducational since organization. Three years of collegiate work are required for admission. Liberal arts students of the University of Cincinnati may enroll for the seven year combined liberal arts and medical program. The B.S. degree is granted on the joint recommendation of the faculties of the College of Liberal Arts and Medicine at the end of the first medical year. Tuition is as follows: for legal residents of Cincinnati $525 a year plus breakage fees ($75 additional for those not legal residents). The registration for 1947-1948 was 321; graduates 76. The last session for freshmen, sophomores, and juniors began Sept. 19, 1947 and ended May 29, 1948. The session for seniors began Feb. 3, 1947 and ended Feb. 7, 1948. The next session for all classes will begin Sept. 24, 1948, and will end June 4, 1949. The Dean is Stanley Dorst, M.D.

Cleveland

Western Reserve University School of Medicine, 2109 Adelbert Road, Zone 6.—Organized in 1843 as the Cleveland Medical College in cooperation with Western Reserve College. The first class graduated in 1844. The school assumed the present title in 1881. In 1910 the Cleveland College of Physicians and Surgeons was merged. Coeducational since 1919. Students are required to have three years of college work for admission. The fees average $612 per academic year. The registration for 1947-1948 was 312; graduates 77. The last session began Sept. 17, 1947 and ended June 5, 1948. The next session will begin Sept. 15, 1948, for freshmen, sophomores and juniors and will end June 4, 1949; the senior session will begin Aug. 30, 1948 and will end June 15, 1949. The Dean is Joseph T. Wearn, M.D.

Columbus

Ohio State University College of Medicine, Noll and Eleventh Avenues, Zone 10.—Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized in 1847 by charter granted by the State Legislature changing the name from Willoughby Medical College, which was chartered March 3, 1834) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. Coeducational since organization. Three years of collegiate work are required for admission. Tuition fees average $480 per academic year and $225 additional for nonresidents. The registration for 1947-48 was 317; graduates 72. The last session for freshman, sophomore and juniors began on Sept. 30, 1947 and ended June 11, 1948; for seniors March 25, 1947 to March 19, 1948. The present session begins Sept. 28, 1948, and ends June 10, 1949. The last accelerated group will be graduated December 17, 1948. The Dean is Charles A. Doan, M.D.

OKLAHOMA

Oklahoma City

University of Oklahoma School of Medicine, 800 North East Thirteenth Street, Zone 4.—Organized in 1900. Until 1910 gave only the first two years of the medical course at Norman, Oklahoma, after which a clinical department was established at Oklahoma City through consolidation with the Medical School of Epworth University. The first class graduated in 1911. Coeducational since organization. A new medical school building and a second teaching hospital became available in 1928, and since September of that year the entire four year course has been given in Oklahoma City. Prerequisites for admission are three years—90 semester hours. The fees for residents of Oklahoma are $350; nonresidents, $700. The registration for 1947-48 was 259; graduates 62. The last session began Sept. 15, 1947 and ended May 31, 1948. The next session will begin Sept. 20, 1948 and will end June 6, 1949. The Dean is Mark R. Everett, Ph.D.

OREGON

Portland

University of Oregon Medical School, Marquam Hill, Zone 1.—Organized in 1887. The first class graduated in 1888, and a class graduated each subsequent year except 1898. The Willamette University Medical Department was merged in 1913. Coeducational since organization. Entrance requirement is three years of collegiate work. The total fees are, respectively, $388.50, $388.50, $383.50 and $390 for residents of Oregon and $150 a year additional for nonresidents. The registration for 1947-1948 was 271; graduates 65. The last session began Sept. 30, 1947 and ended June 18, 1948. The next session will begin Sept. 29, 1948 and will end June 17, 1949. The Dean is D. W. E. Baird, M.D.

PENNSYLVANIA

Philadelphia

Hahnemann Medical College and Hospital of Philadelphia, 235 North Fifteenth Street, Zone 2.—Organized in 1848 as The Homeopathic Medical College of Pennsylvania. In 1869, it and a corporation known from 1853 to 1867 as The Washington Medical College of Philadelphia, and thereafter as The Hahnemann Medical College of Philadelphia were merged under the latter title. Assumed present title in 1885. The first class graduated in 1849. Coeducational beginning with 1941-1942 session. Three years of collegiate work in an approved college of arts and sciences are required for admission. Fees are respectively $655, $650, $650, $675. The registration for 1947-1948 was 405; graduates 112. The last session began for seniors April 11, 1947 and ended March 18, 1948. The last session for juniors began Sept. 29, 1947 and ended June 5, 1948. The last session for sophomores began Sept. 29, 1947 and ended June 19, 1948. The last session for freshmen began Sept. 22, 1947 and ended June 12, 1948. The next session for freshmen will begin Sept. 20, 1948 and will end May 28, 1949, other classes will begin Sept. 27, 1948 and will end for seniors June 16, 1949, for juniors June 11, 1949, for sophomores June 4, 1949. The Dean is Charles L. Brown, M.D.

Jefferson Medical College of Philadelphia, 1025 Walnut Street.—Organized in 1825 as the Medical Department of Jefferson College, Canonsburg, Pa. It was chartered with its present title in 1838. Classes have been graduated annually beginning in 1826. In 1838 a separate university charter was granted without change of title, since which time it has continued under the direction of its board of trustees. For the class entering in 1949 the minimum entrance requirement will be three years of college work. The tuition fee is $700 a year. The registration for 1947-1948 was 621; graduates 148. The last session began for all classes on Sept. 11, 1947 and ended for juniors and seniors on May 31, 1948; for freshman on June 7, 1948, for sophomores June 10, 1948. Graduation was on June 4, 1948. The next session will begin for all classes on Sept. 11, 1948 and will end in June 1948. The Dean is William H. Perkins, M.D.

Temple University School of Medicine, 3400 North Broad Street, Zone 40.—Organized in 1901. The first class graduated in 1904. Coeducational since organization. Three years of collegiate work are required for admission. The fees average $710 per academic year. The registration for 1947-1948 was 459; graduates 124. The last session began Sept. 22, 1947 and ended June 17, 1948. The next session will begin Sept. 20, 1948 and will end June 16, 1949. The Dean is William N. Parkinson, M.D.

University of Pennsylvania School of Medicine. Thirty-Sixth and Pine Streets.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772 and 1775-1779, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title was adopted in 1909. It granted the first medical diploma issued in America. In 1916, it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. Coeducational since 1914. Three years of collegiate work are required for admission. The tuition fee is $700, with a deposit fee of $15, a general fee including student health of $15 and a matriculation fee of $5. The registration for 1947-1948 was 479; graduates 127. The last session for seniors began April 7, 1947 and ended March 6, 1948. The last session for freshmen, sophomores and juniors began Sept. 22, 1947 and ended June 9, 1948. The next session will begin Sept. 27, 1948 and will end June 15, 1949. The Dean is John McK. Mitchell, M.D.

Women's Medical College of Pennsylvania, Henry Avenue and Abbotsford Road, Zone 29.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. At least three years of collegiate work are required for admission and candidates with a degree are given preference. The curriculum covers four years of eight and one-half to nine months each. Total fees are $675 yearly. The registration for 1947-1948 was 158; graduates 35. The last session began Sept. 11, 1947 and ended June 4, 1948. The next session will begin Sept. 16, 1948 and will end June 30, 1949. The Dean is Marion Fay, Ph.D.

Pittsburgh

University of Pittsburgh School of Medicine, 3941 O'Hara Street.—Organized in 1886, as the Western Pennsylvania Medical College and in 1908 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. Coeducation since 1899. Entrance requirements are two years of collegiate work. The total fees are $500 each year. The registration for 1947-1948 was 303; graduates 75. The last session for seniors began April 7, 1947 and ended March 27, 1948. The last freshman, sophomore and junior classes began Sept. 29, 1947 and ended June 26, 1948. The next session will begin on Sept. 13, 1948 for all classes and will end June 8, 1949. The Dean is William S. McElroy, M.D.

SOUTH CAROLINA

Charleston

Medical College of the State of South Carolina, 16 Lucas Street, Zone 16.—Organized 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. Coeducational from 1895 to 1912, when privileges for women were withdrawn, being restored in 1917. At least three years of collegiate work are required for admission. The total fees average $425 each year for residents of South Carolina and $625 for nonresidents of the state. The registration for 1947-1948 was 212; graduates 53. The last session began Sept. 25, 1947 and ended June 3, 1948. The next session will begin Sept. 23, 1948 and will end June 2, 1949. The Dean is Kenneth M. Lynch, M.D.

TENNESSEE

Memphis

University of Tennessee College of Medicine, 874 Union Avenue, Zone 3.—Organized in 1876, at Nashville as Nashville Medical College. First class graduated in 1877, and a class graduated each subsequent year. Became Medical Department of University of Tennessee in 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor. In 1911 it moved to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913, Lincoln Memorial University Medical Department was merged in 1914. Coeducational since 1911. Two years of collegiate work are required for admission. The B.S. degree is conferred on students completing the science-medical curriculum of the University. The fees are $175 quarterly. For residents of the state the charge is reduced $50 each quarter. The registration for 1947-1948 was 511; graduates 99. During the next academic year the quarters begin September, January, March and July. The Dean is O. W. Hyman, Ph.D.

Nashville

Meharry Medical College, Eighteenth Avenue North and Meharry Boulevard, Zone 8 (For Negro Youth).—Organized in 1876 as the Meharry Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1915. Coeducational since 1876. Two years of college work in a school of liberal arts are required for admission. Tuition and fees are: first year $410, second year $400, third year $390 and fourth year $400. The curriculum covers four academic years of thirty-six weeks each. In September 1943, Meharry Medical College instituted the quarter system. The registration for 1947-1948 was 234; graduates 58. The last session began on Sept. 29, 1947 and ended on June 19, 1948. The next session begins on Sept. 27, 1948 and will end on June 18, 1949. The Director of Medical Education is Murray C. Brown, M.D.; the Dean is Michael J. Bent, M.D.

Vanderbilt University School of Medicine, Twenty-First Avenue South at Edgehill, Zone 4.—This school was founded in 1874. The first class graduated in 1875. Coeducational since 1925. For matriculation, students must be graduates of collegiate institutions of recognized standing or seniors in absentia, who will receive the bachelor degree from their college after having completed successfully one year of work in the school of medicine. The course covers four academic years of nearly nine months each. The fees average $615 per academic year. The registration for 1947-1948 was 207; graduates 54. The last session began Sept. 22, 1947 and ended June 7, 1948. The next session will begin on Sept. 27, 1948 and will end June 6, 1949. The Dean is Ernest W. Goodpasture, M.D.

TEXAS

Dallas

Southwestern Medical College, 2211 Oak Lawn.—Organized in 1943. The first class graduated March 20, 1944. Coeducational since organization. The medical college is operated on the regular program offering three terms of twelve weeks each per academic year. Tuition for an academic year is $575. Hospitalization charges are not included in this fee. Ninety semester hours are required for admission. Registration for 1947-1948 was 224; graduates 50. The last session began Sept. 8, 1947 and ended for freshmen and seniors on June 7, 1948 and for sophomores and juniors on June 26, 1948. The next session will begin Sept. 7, 1948 and end June 6, 1949. The Dean is W. Lee Hart, M.D.

Galveston

University of Texas School of Medicine, 912 Avenue B.—Organized in 1891. The first class graduated in 1892. Coeducational since organization. Ninety semester hours are required for admission to the freshman class matriculating in September 1948, but students are urged to complete the baccalaureate degree if possible prior to matriculation. The fees average $113 per academic year, including health fees for medical care and hospitalization. The registration for 1947-1948 was 347. Graduates on Feb. 13, 1948 were 80. The last session began on Sept. 15, 1947 for the freshman, sophomore, and junior classes and ended on June 12, 1948. The senior class for the last session began on Feb. 10, 1947 and ended Feb. 13, 1948. The next freshman class will matriculate on Sept. 20, 1948, and the sophomore, junior, and senior classes will matriculate on Sept. 27, and all classes will end June 11, 1949. The Vice President is Chauncey D. Leake, Ph.D., and D. Bailey Calvin, Ph.D., is Dean of Student and Curricular Affairs.

Houston

Baylor University College of Medicine, Texas Medical Center.—Organized in 1900 at Dallas as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University. It acquired the charter of Dallas Medical College in 1904. The school was moved to Houston in 1943. Coeducational since organization. The first class graduated in 1903. Entrance requirements are 90 semester hours of collegiate work. The course covers four years of eight months each. The fees are respectively $536, $546, $531, $556. The registration for 1947-1948 was 293; graduates 64. The last session began Oct. 6, 1947 and ended June 14, 1948. The next session will begin Oct. 4, 1948 and will end June 13, 1949. The Dean is W. H. Moursund, M.D.

UTAH

Salt Lake City

University of Utah College of Medicine.—Organized in 1906. Coeducational since organization. Four year curriculum established March 1943. Three years of collegiate work are required for admission. The University of Utah has accepted in principle the policy of acceleration by graduating a class in three calendar years (4 academic years), but will admit only one class annually. The next freshman class will be admitted in June, 1949. All subsequent freshman classes will begin in June of each year. Classes are scheduled during four academic quarters (11-12 wks.) each calendar year. An entering first year student may be graduated in 12 academic quarters (3 calendar years) after date of admission; attendance during the summer quarter being required. Applications for admission (complete) must be submitted 9 months prior to opening date. The fees for each quarter average $148; there is a nonresident fee of $55 each year. The registration for 1947-1948 was 178; graduates 36. The last session began for freshmen June 16, 1947 and ended March 19, 1948. The present session for freshmen began June 14, 1948 and will end March, 1949. The present session for sophomores began March 27, 1948 and will end Dec., 1948. The present session for juniors and seniors began Jan., 1948 and will end Aug. 29, 1948. The Dean is Richard H. Young, M.D.

VERMONT

Burlington

University of Vermont College of Medicine, Pearl Street, College Park. Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. Coeducational since 1920. Three years of college work are required for admission. For residents of Vermont the tuition fee averages $500 per session. Nonresidents are charged an additional $150 each session. A $25 fee is charged for the doctor's degree. Registration for 1947-1948 was 153; graduates 40. The last session for freshmen, sophomores and juniors began Sept. 20, 1947 and ended June 21, 1948. The last senior class began July 15, 1947 and graduated June 21, 1948. The next senior class will begin July 3, 1948; the next freshman, sophomore and junior classes will begin Sept. 18, 1948 and all classes will end June 20, 1949. The Dean is William Eustis Brown, M.D.

VIRGINIA

Charlottesville

University of Virginia Department of Medicine.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. Coeducational since the session of 1920-1921. Three years of college work are required for admission. For residents of Virginia the average tuition fee is $428 per academic year; for nonresidents, $578. The registration for 1947-1948 was 250; graduates 59. The last session began Sept. 15, 1947 and ended June 14, 1948. The next session will begin Sept. 14, 1948 and will end June 13, 1949. The Dean is Harvey E. Jordan, Ph.D.

Richmond

Medical College of Virginia, Twelfth and Marshall Streets.—Organized in 1838 as the Medical Department of Hampden-Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Coeducational since 1918. Classes were graduated in 1839 and in all subsequent years. Three years of collegiate work, as a minimum, are required for admission. Preference, however, is given to applicants with a baccalaureate degree. Fees average $510 per academic year. Nonresidents are charged an additional $300 each year. The registration for 1947-1948 was 314; graduates 85. The last session began Sept. 15, 1947 for second, third and fourth year classes and ended June 8, 1948. The last session for the first year class began Sept. 10, 1947 and ended June 8, 1948. The subsequent session will begin Sept. 9, 1948 for the first year class and Sept. 13, 1948 for the second, third and fourth year classes and will end June 7, 1949. The Dean is Harvey B. Haag, M.D. The Associate Dean and Chairman of the Admissions Committee is Mr. George W. Bakeman.

WISCONSIN

Madison

University of Wisconsin Medical School, 418 North Randall Avenue, Zone 6.—Organized 1907. Gave only the first two years of the medical course until 1925, when the clinical years were added. Coeducational since organization. Fees for the first, second and third years are $280, for the fourth year $190 per academic year for residents. An additional fee of $300 per year is charged nonresidents. Registration for 1947-1948 was 278; a class of 59 was graduated June 19, 1948. The last session for freshman, sophomore and junior students began Sept. 9, 1947 and ended June 19, 1948. The last session for seniors began June 9, 1947 and ended June 19, 1948. The present senior class began June 28, 1948 and will graduate June 18, 1949. Freshman, sophomore and junior classes will begin Sept. 20, 1948 and will end June 18, 1949. The Dean is William S. Middleton, M.D.

Milwaukee

Marquette University School of Medicine, 561 North Fifteenth Street.—Organized in December 1912 by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. Coeducational since organization. Three years of collegiate work are required for admission. The fees are $600 per academic year. The registration for the 1947-1948 session was 350; graduates 82. The last session began Sept. 29, 1947 and ended June 5, 1948. The next session for freshman, sophomore and junior students will begin Sept. 27, 1948 and will end May 28, 1949. The present session for seniors began July 5, 1948 and will end June 12, 1949. The Dean is John S. Hirschboeck, M.D.

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APPROVED MEDICAL SCHOOLS IN CANADA

Alberta

University of Alberta Faculty of Medicine, Edmonton.—Organized in 1913. Coeducational since organization. Has given complete medical course since 1924. New course—three years premedical, four years of medicine—offered with the session 1947-1948. Tuition for the four years is $350 per session. The registration for 1947-1948 was 171; graduates, two classes, old five year—32, new four year—44. The last session began Sept. 16, 1947 and ended June 15, 1948. The next regular session will begin Sept. 7, 1948 and end June 17, 1949. The Dean is John W. Scott, M.D.

Manitoba

University of Manitoba Faculty of Medicine, Bannatyne Avenue, Winnipeg.—Organized in 1883 as Manitoba Medical College. First class graduated in 1886, and a class graduated each subsequent year. The college transferred all its property to the University of Manitoba in 1919 and assumed the present title. Coeducational since organization. Matriculation requirements include two years of collegiate work in the faculty of arts and sciences of a recognized university. This will be increased to three years with the session 1949-1950. The course extends over four years of eight months each and a hospital internship. The fees average $396 yearly. The registration for 1947-1948 was 280; graduates 62. The last session began Sept. 15, 1947 and ended May 18, 1948. The next session will begin on Sept. 10, 1948 and will end on May 15, 1949. The Dean is A. T. Mathers, M.D.

Nova Scotia

Dalhousie University Faculty of Medicine, Morris Street, Halifax.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College, in 1905. In 1911, in accordance with an agreement between the Governors of Dalhousie University and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the university. First class graduated in 1872. Coeducational since 1871. Requires for matriculation two years of arts. The regular medical course covers four years and a hospital internship of one year approved by the medical faculty. The fees average $331 yearly; $250 additional registration fee payable by students outside the British Empire. The registration for 1947-1948 was 204; graduates 34. The next session for all classes will begin Sept. 14, 1948 and will end May 17, 1949. The Dean is H. G. Grant, M.D.

Ontario

Queen's University Faculty of Medicine, Kingston.—Organized in 1854. First class graduated in 1855 and a class graduated each subsequent year. Fees for the first year amount to $342.50 and for each of the other five year $358.50. The course consists of five sessions of 30 teaching weeks, and a sixth year spent in a hospital designated by the University. The degrees of M.D., C.M. are not awarded until the end of the sixth year. Freshmen will be admitted annually. Registration for 1947-1948 was 270. The last session began Sept. 22, 1947 and ended May 15, 1948. The next session will begin Sept. 27, 1948 and will end May 14, 1949. The last convocation was held on June 19, 1947. As a result of the discontinuance of the accelerated medical course there will be no graduating class until June 1949. The Dean is G. Spencer Melvin, M.D.

University of Western Ontario Faculty of Medicine, 346 South Street, London.—Organized in 1881 as the Western University Faculty of Medicine. First class graduated in 1883 and a class graduated each subsequent year. Present title in 1923. The Faculty of Medicine has been under the control of the Board of Governors of the University of Western Ontario since 1913. Coeducational since 1913. The normal course of study covers two honour college years of nine months each and four years of ten months each in the Faculty of Medicine. The total fees to residents of Canada for the last four years, respectively, are $390, $390, $390, $398; nonresidents are charged $700, $700, $700, $700 for each of the last four years. The registration for 1947-1948 was 247; graduates 40. The last session began Sept. 8, 1947 and ended June 11, 1948. The next session begins Sept. 13, 1948 and ends May 21, 1949. The Dean is J. B. Collip, M.D.

University of Toronto Faculty of Medicine, Toronto 5.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University Medical Department and in 1903 it absorbed the Medical Faculty of Trinity University. Coeducational since 1903. The degree of M.D. is conferred after 4 years in the study of medicine. Admission to the medical course is gained following honour matriculation and after two years in the study of premedical requisites in the University of Toronto. A certain number are admitted each year to the first medical year who hold Arts degrees from recognized universities and who have covered the necessary work in the humanities and sciences. The B.Sc. (Med.) degree may be conferred for special work or investigation as a graduate degree, or under certain circumstances for an extra year's work as an undergraduate. The registration for 1947-1948 in the medical and premedical years was 945; graduates 129. The last class began Sept. 23, 1947 and ended May 1,

1948. The next session for first and second premedical years will begin on Sept. 21, 1948 and for first, second, third and fourth medical years on Sept. 20, 1948. The session for premedical years will end on April 30 and for medical years on May 14, 1949. Students will graduate annually in June. The Dean is J. A. MacFarlane, M.B.

Quebec

McGill University Faculty of Medicine, 3640 University Street, Montreal.—Founded in 1823 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-1839, owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop's College. Coeducational since 1917. Four years of collegiate work are required for admission. The total fees for each of the four medical years are $464. The registration for 1947-1948 was 477; graduates 119. The last session began Sept. 3, 1947 and ended June 1, 1948. The next session will begin Sept. 7, 1948 and will end June 4, 1949. The Dean is Frederick Smith, M.D.

University of Montreal Faculty of Medicine, 2900 Mount Royal Boulevard, Montreal.—Organized in 1843 as the Montreal School of Medicine and Surgery. In 1891, by Act of Parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name by Act of Parliament in 1920. A class was graduated in 1843 and each subsequent year. Coeducational since 1925. The requirements for admission are: First, a B.A. degree (or its equivalent); second, one year premedical in the faculty of pure sciences (or an entrance examination on the premedical subjects). An internship is required for graduation. The fees average $285 yearly. The registration for 1947-1948 was 382; graduates 100. The last session began Sept. 15, 1947 and ended May 8, 1948. The next session will begin Sept. 15, 1948 and will end May 14, 1949. The Dean is Edmond Dubé, M.D.

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 the Laval University Faculty of Medicine; first class graduated in 1855, and a class graduated each subsequent year. The fees for each of the medical years average $226 for residents of Canada. Nonresidents are charged an extra fee of $200 each year. The premedical requirement is a B.A. degree or its equivalent. The registration for 1947-1948 was 551; graduates 72. The last session began Sept. 8, 1947 and ended June 3, 1948. The next session will begin Sept. 15, 1948 and will end June 1, 1949. The Dean is Charles Vézina, M.D.

APPROVED SCHOOLS OF THE BASIC MEDICAL SCIENCES IN THE UNITED STATES

MISSISSIPPI

University

University of Mississippi School of Medicine.—Organized in 1903. Coeducational since organization. A clinical department was established at Vicksburg in 1908 but was discontinued in 1910 after graduating one class. Entrance requirement is three years of collegiate work or ninety semester hours of credit. Fees average $381 annually. There is a nonresident fee of $200. The school operates on an accelerated program by accepting two freshman classes each session. The last session began Sept. 15, 1947 and ended May 29, 1948. Additional freshman class admitted Feb. 2, 1948 and will complete the year Sept. 25, 1948. The sophomore session began July 7, 1947 and ended March 13, 1948. An additional sophomore session began Sept. 27, 1947 and ended July 10, 1948. The next freshman class will begin Sept. 20, 1948 and will end May 28, 1949; the next sophomore class will begin Nov. 1, 1948 and will end July 9, 1949. The Dean is David S. Pankratz, M.D.

MISSOURI

Columbia

University of Missouri School of Medicine.—Organized at St. Louis in 1845; was discontinued in 1855 but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. Coeducational since 1872. The entrance requirements are 90 semester hours of collegiate work. The B.S. degree in medicine is conferred at the end of the second year. Total fees for the first year are $206, for the second $300. The registration for 1947-1948 was 73. The last session began Sept. 16, 1947 and ended June 4, 1948. The next session begins Sept. 17, 1948 and will end June 7, 1949. The Dean is Trawick H. Stubbs, M.D.

NEW HAMPSHIRE

Hanover

Dartmouth Medical School.—Organized by Dr. Nathan Smith in 1797. The first class graduated in 1798. It is under the control of the Trustees of Dartmouth College. Courses of the third and fourth years were discontinued in 1914. Three years of college work and candidacy for the bachelor's degree are required for admission. Candidates for the A.B. degree in Dartmouth College may substitute the work of the first year in medicine for that of the senior year. The tuition is $600 for each year. The registration for 1947-1948 was 46. The last session began on Oct. 3, 1947 and ended June 13, 1948. The next session will begin Sept. 27, 1948 and will end June 12, 1949. The Dean is Rolf C. Syvertsen, M.D.

NORTH CAROLINA

Chapel Hill

University of North Carolina School of Medicine.—Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department in Raleigh. The first class was graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. Coeducational since 1914. Three years of college work are normally required for admission. Certificates are awarded on the completion of two years' work in medicine. The fees are $375 for the first year and $385 for the second year for residents; for nonresidents an additional fee of $100 per year. The registration for 1947-1948 was 100. The North Carolina Legislature of 1947 appropriated funds for the expansion of the school to the full four years. The full program will probably not get under way for three to four years. The last session began Sept. 23, 1947, and ended June 5, 1948. The next session will begin Sept. 20, 1948, and end June 4, 1949. The Dean is W. Reece Berryhill, M.D.

NORTH DAKOTA

Grand Forks

University of North Dakota School of Medicine.—Organized in 1905. Offers only the first two years of the medical course. Coeducational since organization. Three years work in a college of liberal arts are required for admission. The B.S. degree in combined arts-medical course is conferred at the end of the second year. The fees are $150 each year for resident students and $228 for nonresidents. The registration, academic year 1947-1948, was 51. The last session began Sept. 25, 1947 and ended June 12, 1948. The next session will begin Sept. 20, 1948 and will end June 10, 1949. The Dean is W. F. Potter, M.D.

SOUTH DAKOTA

Vermillion

University of South Dakota School of Medical Sciences.—Organized in 1907 as the University of South Dakota School of Medicine. Present title in 1937. Coeducational since organization. Offers only the first two years of the medical course. Three years work in a college of liberal arts are required for admission. Students who complete the third year of premedical work in the College of Arts and Sciences at the University of South Dakota may apply the work of the first year of medicine to an A.B. degree. The B.S. degree is conferred at the end of the second year on those students who do not hold a combination (Arts and Sciences and Medicine Course) A.B. degree. The tuition is $260 for first year residents and $280 for second year residents; $470 for first year nonresidents and $490 for second year nonresidents. The registration for 1947-1948 was 54. The last session began Sept. 8, 1947 and ended May 29, 1948. The next session will begin Sept. 6, 1948 and will end May 30, 1949. The Dean is Donald Slaughter, M.D.

WEST VIRGINIA

Morgantown

West Virginia University School of Medicine.—Organized in 1902. Gives the first two years of the medical course, but agreement has been made for the transfer of 20 students each year to the Medical College of Virginia. Coeducational since organization. Entrance requirements are three years of collegiate work. The B.S. degree is conferred at the end of the second year. Fees for residents of the state are, respectively, $254 and $264; nonresidents, $150 additional each year. The registration for 1947-1948 was 55. The last session began Sept. 15, 1947 and ended May 31, 1948. The next session will begin Sept. 13, 1948 and will end May 30, 1949. The Dean is Edward J. Van Liere, M.D.

APPROVED SCHOOL OF THE BASIC MEDICAL SCIENCES IN CANADA

Saskatchewan

University of Saskatchewan School of Medical Science, Saskatoon. Organized in 1926. Coeducational. Offers the first two years of the medical course. Two years of collegiate work are required for admission. The B.A. degree is conferred at the end of the second year. The fees are $290. The registration for 1947-1948 was 55. The last session for freshmen began Sept. 22, 1947 and ended June 24, 1948. The next session will begin Sept. 20, 1948 and will end June 21, 1949. The Dean is W. S. Lindsay, M.B.

APPROVED EXAMINING BOARDS IN MEDICAL SPECIALTIES

An American board in a specialty is organized (*a*) to assist in improving the quality of graduate education in that field, (*b*) to establish minimum educational and training standards in the specialty, (*c*) to determine whether candidates have received adequate preparation, (*d*) to provide comprehensive examinations to determine the ability and fitness of such candidates and (*e*) to certify to the competence of those physicians who meet these requirements.

Sixteen boards in the specialties have been organized and are approved by the Council on Medical Education and Hospitals of the American Medical Association, and as of March 1, 1948, 31,498 physicians have been certified. The following table lists the approved specialty boards, the date of organization, the number of certificates awarded prior to March 1, 1947 and the number certified to March 1, 1948. Likewise shown in these two categories are the numbers certified in the subspecialties. A third column in this table includes the total number of living certified specialists for the boards that were able to supply such figures. On March 1, 1947 there were 28,496 physicians certified by the fifteen boards in operation. During 1947 the American Board of Physical Medicine was approved and certified 86 physicians. Altogether, 3,002 physicians were certified from March 1, 1947 to March 1, 1948. Up to this latter date a total of 31,498 physicians have been certified by sixteen boards. Up to March 1, 1947, 898 certificates in subspecialties were awarded, and during the ensuing year 84, bringing the total in the subspecialties to 982 as of March 1, 1948.

Table 22.—*Approved Examining Boards in Medical Specialties*

Name of Board	Year of Incorporation	Total Certificates Awarded to March 1, 1947	Total Certificates Awarded to March 1, 1948	Total Certified Specialists Living March 1, 1948
American Board of Pediatrics	1933	2,572	2,749	*
American Board of Psychiatry and Neurology	1934	2,448	2,836	2,720
American Board of Orthopaedic Surgery	1934	1,042	1,214	1,153
American Board of Dermatology and Syphilology	1932	800	972	901
American Board of Radiology	1934	2,373	2,622	*
American Board of Urology	1935	1,136	1,245	1,170
American Board of Obstetrics and Gynecology	1930	2,216	2,470	2,315
American Board of Internal Medicine	1936	4,449	5,008	*
American Board of Pathology	1936	1,178	1,462	1,427
American Board of Ophthalmology	1937	2,364	2,657	2,506
American Board of Otolaryngology	1924	3,268	4,085	*
American Board of Surgery	1937	2,962	3,272	*
American Board of Anesthesiology	1938	316	417	412
American Board of Plastic Surgery	1937	171	175	156
American Board of Neurological Surgery	1940	191	228	226
American Board of Physical Medicine	1947	...	86	86
Totals		28,496	31,498	12,872
Certification in Subspecialties *				
By the American Board of Internal Medicine				
Allergy		95	106	
Cardiovascular disease		261	302	
Gastroenterology		183	208	
Pulmonary disease		163	174	
By the American Board of Pediatrics				
Allergy		17	32	
By the American Board of Surgery				
Proctology		79	80	
Totals		898	982	

* Number deceased specialists not available.

Several of the boards have made changes in their requirements. For the guidance of candidates desiring to qualify for certification, the requirements of the boards are reprinted below verbatim from their published announcements.

AMERICAN BOARD OF ANESTHESIOLOGY

Curtiss B. Hickcox, Philadelphia.
John S. Lundy, Rochester, Minn.
Charles F. McCuskey, Los Angeles.
E. A. Rovenstine, New York.
Henry S. Ruth, Philadelphia.
Meyer Saklad, Providence, R. I.
Ralph M. Tovell, Hartford, Conn.
Rolland J. Whitacre, Cleveland.
John W. Winter, San Antonio, Texas.
Paul M. Wood, Secretary-Treasurer, 745 Fifth Avenue, New York 22.

QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

A. *General.*—1. An applicant's moral and ethical standing in the profession must be satisfactory to the entire board. The board must be assured that the applicant is engaged in the practice of anesthesiology as a specialty and that he intends to continue to be so engaged.

2. Membership is required in the American Medical Association or membership in such other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Membership in other societies shall not be required.

3. Practice must have been limited to anesthesiology for five calendar years, of which at least two must have been devoted to special training.

4. In exceptional instances the board may, in its discretion, accept for examination candidates who have met all the preliminary requirements and have clearly demonstrated their identity as anesthetists over a period of years, but whose formal training does not comply with the full requirements.

B. *Professional Standing.*—1. An applicant must be a graduate of a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association, or a diplomate of the National Board of Medical Examiners.

2. Satisfactory evidence must be supplied of completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.

3. An applicant must establish in a manner satisfactory to the Board of Anesthesiology: that he is a physician duly licensed by law to practice medicine; that he is of high ethical and professional standing, and that he has received adequate training in Anesthesiology.

C. *Special Training and Practice.*—1. Before certification the candidate must have had an active experience limited to anesthesiology of not less than five calendar years (including period of training).

2. The board requires the inclusion of at least two years of carefully supervised instruction in the clinical phases of anesthesiology in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the teaching and practice of anesthesiology. In addition, instruction in anatomy, physiology, pharmacology, biochemistry and other basic sciences which are necessary to the proper understanding of the problems involved in the specialty of anesthesiology is required.

EXAMINATIONS

The qualifying examination will be divided into Part I, written; Part II, oral, and Part III, practical.

PART I

1. An applicant to be eligible for Part I must meet all supervised training requirements, and his credentials must be approved by the board.

2. Part I may be given simultaneously in several places, which the board may deem suitable for the purpose, on the third Friday of each January.[1]

PART II

1. In order to be eligible for Part II, a candidate must have successfully passed Part I and must be a member of the American Medical Association.

2. Part II examinations will be held during the third week in October at a place announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. Later, however, as the demand grows, it may be necessary to establish additional dates when this part may be held.[2]

PART III

1. The examiners will observe the work of the candidates in their own or similar operating room surroundings, their relations to other staff members, and investigate their professional standing.

Conduct of Examination.—Carefully conducted and thorough examinations will be required of candidates. The aim will be to avoid unduly exacting standards above present facilities for study and practice in anesthesiology and, on the other hand, to prevent laxity, which would nullify the main purpose of the certification. Thus the type of examination will depend upon a careful review of the work done, years of practice, special courses of study and professional standing of the applicant.

Written examinations will cover such topics as anatomy, biochemistry, physiology, pharmacology, pathology, physical diagnosis, therapeutics and clinical practice in relation to anesthesiology.

Oral examinations will cover topics in the above list, especially as to their clinical application.

Practical demonstrations will be required of the management of the candidate's clinical practice in his local surroundings. This may include inspection of clinical records, records of departmental activities, library facilities, available apparatus, and demonstrations of application of anesthetic agents, methods and technics included in anesthesiology.

Grades.—A candidate must receive a passing average for each part to be entitled to certification.

A candidate who fails in his examination in Parts I, II or III may be permitted reexamination at yearly intervals for two (2) consecutive examinations in that part without further payment of fee. The board may, however, for sufficient reason, deny a candidate the privilege of reexamination.

Applicants who fail to exercise the examination privilege within three (3) years of the date of becoming eligible for examination are required to file a new application and pay a new application fee.

Fee.—The fee shall be $100. At least $25 shall be paid on filing the application (of which sum $15 will be returned if the candidate is not accepted for examination) and the remainder shall be paid before taking the examinations.

This board is a nonprofit organization. All fees are to be used to extend the existing facilities for training in anesthesiology, after deducting necessary expenses for maintenance of the office, and the conducting of examinations. The board reserves the right to increase the fee when found necessary.

Additional Information.—Every candidate applying for certification must personally appear before the board before being certified.

Application must be made on special blanks to be procured only on written request by the applicant from the secretary of The American Board of Anesthesiology. They must be completely and accurately filled out, accompanied by the other required credentials, and filed with the secretary after one year of supervised instruction and at least three months prior to the date of examination.

The secretary cannot make any eligibility rulings. These are made only by the entire board on recommendation of the appropriate committees after reviewing the candidate's formal application. Applications cannot be considered for classification and action by these committees unless accompanied by an application fee of $25, $10 of which is not returnable.

1. If there are sufficient applicants written examinations may be held on the third Friday of July annually.
2. Oral examinations may be held during the third week of April annually.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY

FRANCIS E. SENEAR, President, Chicago.
J. GARDNER HOPKINS, Vice President, New York.
GEORGE M. LEWIS, Secretary-Treasurer, 66 East 66th Street, New York 21.
FRANK E. CORMIA, Assistant Secretary, New York.
NELSON P. ANDERSON, Los Angeles.
ANTHONY C. CIPOLLARO, New York.
HENRY E. MICHELSON, Minneapolis.
PAUL O'LEARY, Rochester, Minn.
BEDFORD SHELMIRE, Dallas, Texas.
FRED D. WEIDMAN, Philadelphia.

REQUIREMENTS FOR ELIGIBILITY FOR EXAMINATION

I. GENERAL REQUIREMENTS

1. High ethical and professional standing.

2. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association. The credentials of graduates of foreign schools must be approved by the National Board of Medical Examiners.

3. Satisfactory completion of an internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the board.

4. A license to practice medicine issued by endorsement of the certificate of the National Board of Medical Examiners or following examination.

5. Membership in the American Medical Association or membership in a similar society recognized as having the same purpose as the American Medical Association.

6. Citizenship in the United States or citizenship—meaning native citizens—in Canada or Cuba.

II. SPECIAL REQUIREMENTS

Applicants for certification of the Board are classed in two groups as follows:

Group A consists of physicians who have limited their practice mainly to dermatology and syphilology for ten or more years, including a period of training satisfactory to the Board. This classification will be abolished after Jan. 1, 1949.

Group B consists of physicians who have completed an approved three year period of training.

In accordance with the program recommended to the various specialty boards by the Advisory Board for Medical Specialties the following minimum requirements of special training for admission to examination have been established:

A period of study, after the internship, of not less than three years. This training may be obtained as resident, fellow or graduate student in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by the American Board of Dermatology and Syphilology as competent to provide a satisfactory training in dermatology and syphilology. This period of specialized training shall include:

(*a*) At least one calendar year in an institution approved for three year training (less one month for vacation).

(*b*) Graduate training in the basic medical sciences which are necessary for the proper understanding and treatment of the diseases involved in this specialty.

Instruction in the following fundamental subjects as related to the skin is deemed advisable by the board: embryology, histology, chemistry, physiology, bacteriology, mycology, parasitology, pathology, immunology, serology, pharmacology and material medica, and physics of physical therapy.

(*c*) Carefully supervised clinical and laboratory experience in the specialty.

(*d*) Annual examinations in the clinical, laboratory and public health aspects of dermatology and syphilology.

PRECEPTORSHIP TRAINING

Candidates may spend one year of their training in the office of a diplomate of the board, who has also been approved as a preceptor by the board. The office training may be divided over two years, with one-half day spent in the office of the preceptor and the other half day in an approved institution. Preceptorship training may be taken during any of the years of training. Time spent with an instructor who has not been approved by the board may count only as experience and not as training. A list of approved preceptors is available in the office of the secretary.

The board assumes the responsibility of determining the standards of knowledge to be acquired, but upon the candidate rests the responsibility of acquiring the knowledge to fill these standards.

PRELIMINARY REGISTRATION, APPLICATION AND FEE

All students beginning their graduate training should file a preliminary registration form with the secretary.

In order that the committee on requirements may appraise carefully the qualifications of candidates, application must be made on a special blank, which may be obtained from the secretary. No application will be considered unless made on the regular application blank. Applications should be filed early in order to obtain full advantage of the sets of histopathologic slides which are available through the Army Medical Museum in Washington. The completed application blank should be sent, at least two months before the date of examination, to the secretary of the board together with the required reprints, photographs and a registration fee of $25 which will not be refunded under any circumstances. No application will be considered until this fee is received. An examination fee of $75 is payable when the candidate is notified that his application is acceptable to the board. The fee of $100 has been carefully computed and is used entirely for administrative purposes. Examiners for the board do not receive any compensation except for actual expenses connected with holding the examinations.

Make checks payable to American Board of Dermatology and Syphilology, Inc.

EXAMINATIONS

Applicants classified in Group B will be required to pass a written examination. This written examination on clinical, basic science and laboratory subjects will be held simultaneously at stated intervals in different parts of the country, approximately two months before the oral examination. Candidates must pass the written examination before being admitted to the oral examination.

Applicants classified either in Group A or in Group B will be required to pass an oral, clinical and laboratory examination. This examination will be conducted in a clinic or hospital ward where individual cases will be discussed with each candidate, as well as various subjects related to the skin such as histopathology, mycology, allergy and physics of physical therapy. The board reserves the right to add to this list other subjects within the field of dermatology and syphilology.

A candidate for a certificate may take both the written and oral examinations at the next regular examination of the board after he has completed three full years of training in the specialty; this provision does not affect the regulations about the issuance of the certificate. (See Certificates.)

Examinations are designed to test the candidate's fitness to practice dermatology and syphilology as a specialty. The board will try especially to ascertain the breadth of his knowledge in the basic, as well as the clinical aspects of cutaneous medicine, to test his familiarity with the recent literature of dermatology and syphilology and to ascertain his general qualifications as a specialist in this branch of medicine.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instructions for the purpose of overcoming deficiencies in the applicant's knowledge of this specialty.

Except in special circumstances, applicants shall take the examination within the year following the filing of application and the deposit of the fee.

The oral examination may be held near the time and place of the annual meeting of the American Academy of Dermatology and Syphilology. This examination will be held only at the time of regular meetings of the Board.

REEXAMINATIONS

If the candidate fails or is conditioned in an examination he will be admitted to a second examination after one year, and must give sixty days' notice of his intention to appear for reexamination. If a candidate who has failed or has been conditioned does ont appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $75 before reexamination.

A candidate who has failed twice must file a new application and pay an additional fee of $75.

CERTIFICATES

A certificate will not be issued until the candidate has completed at least five years of dermatologic training and experience. The granting of this certificate by the board indicates that the holder of the certificate has had adequate training in dermatology and syphilology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice dermatology or syphilology. The board does not intend to limit or interfere with the professional activity of any duly licensed physician. Its aim is to improve the standards of practice of dermatology and syphilology by encouraging improvement in the opportunities for and quality of training for specialists in this field of medicine, and to certify as specialists those who voluntarily comply with the requirements of the board.

Certificates will be issued only to physicians in the United States and its possessions, in Canada, and in Cuba.

AMERICAN BOARD OF INTERNAL MEDICINE

HUGH J. MORGAN, Chairman, Nashvile, Tenn.
MARION A. BLANKENHORN, Vice Chairman, Cincinati.
TRUMAN G. SCHNABEL, Secretary-Treasurer, 1704 Pine Street, Philadelphia.
WILLIAM A. WERRELL, Assistant Secretary-Treasurer, 1 West Main Street, Madison 3, Wis.
LEROY H. BRIGGS, San Francisco.
ALEXANDER M. BURGESS, Providence, R. I.
CHESTER M. JONES, Boston.
WALTER L. PALMER, Chicago.
WILLIAM B. PORTER, Richmond, Va.
BURRELL O. RAULSTON, Los Angeles.
ROY W. SCOTT, Cleveland.
VIRGIL P. W. SYDENSTRICKER, Augusta, Ga.
CECIL J. WATSON, Minneapolis.

REQUIREMENTS FOR ADMISSION TO EXAMINATION AND CERTIFICATION

Each applicant for certification by this board must satisfy the qualifications listed below: (I) General Qualifications A, B, C, D; (II) Professional Qualifications A, B, C, D. For exceptions to the requirements C and D under Professional Qualifications see paragraph G.

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I. General Qualifications

A. All candidates must be citizens of the United States or Canada.

B. All candidates must present evidence of satisfactory moral and ethical standing in the medical profession.

C. All candidates must be active members in good standing in their county and state medical societies in their state of legal residence. Under unusual and exceptional circumstances the board reserves the privilege of modifying this requirement. (This ruling shall not apply to commissioned officers of the United States regular Army or Navy or United States Public Health Service who are otherwise members of the American Medical Association.)

D. Canadian citizens applying for admission to examination must be active members of the Canadian Medical Association.

II. Professional Qualifications

A. Graduation from a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association at the date of graduation.

B. Satisfactory completion of an approved internship of not less than twelve months.[1]

C. Approved residency or fellowship training in internal medicine according to the following plan (Plan A) or one of the alternate plans described under paragraph D.

Plan A: A residency or fellowship in internal medicine for a period of not less than three years in a hospital or other institution approved by the Council on Medical Education and Hospitals of the American Medical Association for residency or fellowship in internal medicine. In addition, two years of practice of clinical internal medicine will be required. The board will accept the following equivalents as satisfying one year only of the three years of residency or fellowship to which this paragraph refers.

1. A second year (or a part thereof) of approved internship in a hospital approved for resident training in internal medicine if limited to the medical service (or medical specialties noted under 2) for one year and if recognized as being the equivalent of an assistant residency by the Medical Director of the hospital and the Chief of the Medical Service.

2. One year of approved residency in one of the medical specialties: allergy, cardiovascular disease, gastroenterology, hematology, pulmonary diseases, neurology, pediatrics and psychiatry.

3. One year of approved residency in pathology.

4. One year as a graduate student or as an instructor in an approved medical school on a full time basis in bacteriology, biochemistry, pathology, pharmacology, physiology or internal medicine.

5. An advanced degree in the fundamental sciences.

NOTE.—Graduate training credit for the time involved will be allowed veterans and other candidates who take and satisfactorily complete postgraduate courses in internal medicine or the basic medical sciences provided by accredited medical schools. This ruling shall not apply to courses of less than three months or more than twelve months duration. A certificate of creditable performance, based in part, at least, on a formal examination upon completion of the course, will be required.

D. Alternate Training Plans: The board firmly believes that the plan of intensive training prescribed above offers the best opportunity for a young physician to prepare himself to meet his responsibilities as a specialist in internal medicine. It is recognized, however, that capable individuals may accomplish the same result in a longer period of time during which the training is less intensive. The board realizes that a number of medical graduates cannot follow the shorter and more desirable plan either because suitable residencies are not available or, in some instances, because of personal and economic reasons. Accordingly the board has modified its previous regulations governing eligibility for admission to examination. In doing so the board has not modified its standards of examination. It has liberalized its eligibility requirements for admission to examination by accepting half time formal training and the practice of internal medicine under favorable circumstances as to professional and hospital contacts, in lieu of part of the full time requirements. It is hoped that by this means exceptional individuals may acquire a knowledge of medicine and experience in its application sufficient to qualify for certification.

The program already described (Plan A), which consists of three years of formal training in an approved residency or its equivalent, following internship, and two additional years in the practice of internal medicine, is recommended by the board. Variations in this program are now made subject to the following regulations.

1. The board will grant one year of graduate training credit, or one year in satisfaction of the requirements of practice, regardless of assignment, for active duty as a commissioned officer in the United States Army, Navy or United States Public Health Service for one year or more, beginning on or subsequent to Dec. 7, 1941 and terminating on or before Jan. 1, 1947. Commissioned officers serving less than one year prior to Jan. 1, 1947 may apply that interval as graduate training.

2. Following one year of internship and two years of approved residency,[2] the remaining requirements may be satisfied by: Plan B; that is, by two years of half time formal training followed by two years of practice limited to internal medicine, or by Plan C; that is, by five years of practice limited to internal medicine.

3. Following one year internship and one year of approved residency, the remaining requirements may be satisfied by: Plan D[3]; that is, by four years of half time formal training followed by two years of practice limited to internal medicine; or by:

Plan E[3]; that is, by two years of half time formal training followed by five years of practice limited to internal medicine, or by:

Plan F; that is, by eight years of practice limited to internal medicine.

4. In every instance at least two years of practice in internal medicine must be included, but in instances in which four years of practice are substituted for one year of residency, only one additional year of practice will be required; when more than eight years of practice are substituted for two years of residency an additional year of practice will not be required.

5. Physicians who have practiced internal medicine for twelve years following an approved internship may qualify for the examinations without further training (Plan G).

Half time formal training under expanded plans B, D and E is defined as follows:

1. Half-time[4] as an instructor in clinical medicine in a recognized medical school in the United States or Canada.
2. Half-time[4] in a research fellowship sponsored by a recognized medical school in the United States or Canada.
3. Half time[4] as a graduate student in an approved graduate medical school in the United States or Canada.

E. Practice Requirements: A period of not less than two years of practice in the general field of clinical internal medicine or in the more specialized branches of medicine. (See exceptions, paragraph 4. This requirement may be satisfied by independent practice or in association with a recognized internist.

NOTE: Although in general the board believes it desirable to complete the three years of formal training before satisfying the requirements of practice a reversal of this order is acceptable.

F. Graduates of Foreign Schools: At the present time neither the Council on Medical Education of the American Medical Association nor any other educational agency in the United States has the machinery to evaluate adequately the quality of foreign medical education. This board must, therefore, evaluate

1. During the period in which the 9-9-9 program was in effect an approved internship of nine months will satisfy the requirement of twelve months. A residency of nine months is considered as nine months only.

2. For the second year of approved residency one of the equivalents described under C may be substituted.
3. Refer to description of half-time formal training.
4. Certification by the head of department in which the work was done is required.

the fundamental educational credentials and other qualifications of each individual candidate educated abroad who applies for admission to examination. (Requirements for graduates of foreign schools may be obtained on request to the board—One West Main Street, Madison 3, Wis.).

G. Candidates Graduating Prior to 1937: The requirement of three years of graduate training will not apply to candidates graduating from approved medical schools in the United States and Canada in 1936 or previous thereto, provided such candidates have limited their work to the field of internal medicine for at least two years, and provided each candidate is recognized as an internist by his colleagues in his community.

H. "Preceptor Training": Preceptor type training is not recognized in satisfaction of any part of the three year requirement of formal graduate training.

I. The board will grant one year of graduate training credit, or one year in satisfaction of the requirements of practice, regardless of assignment, for active duty as a commissioned officer in the United States Army, Navy, or United States Public Health Service for one year or more, beginning on or subsequent to Dec. 7, 1941 and terminating on or before Jan. 1, 1947.

Depending upon the nature of the duty assignments, after Jan. 1, 1947 active duty as a commissioned officer in the United States Army Reserve Corps, United States Naval Reserve Corps or United States Public Health Service may be applied in satisfaction of one year of the requirements of practice but will not be regarded as satisfying any part of the graduate training requirements, unless the officer is assigned as a resident in internal medicine, neurology, psychiatry or pathology in an Army, Navy or United States Marine hospital which is approved by the Council on Medical Education and Hospitals of the American Medical Association for resident training in the divisions of medicine referred to.

One written examination will be held each year, effective Jan. 1, 1949. Examinations will be held on the third Monday in October of each year. Applications for this examination must be filed by May 1 of the year concerned.

PRINCIPLES OF TRAINING

The American Board of Internal Medicine is interested in the fact that the candidate has embarked on a career of study voluntarily and has thereby expressed the desire to excel and to participate personally in the world's progress in medicine.

Preparation must be based on years of continuous thoughtful study. Therefore, in suggesting a program for those who wish advice, the board hopes to assist the candidates to avoid inferior and superficial programs which may lead to failure and disappointment in later years.

The board believes that all internists should have a sound fundamental knowledge of anatomy, bacteriology, biochemistry, pathology, pharmacology and physiology. Such knowledge is essential to the continued progress of any internist. The board anticipates that adequate training will be obtained in the basic sciences as applied to internal medicine during a formal three year residency program.

The board wishes to emphasize that time and training are but a means to the end of acquiring a broad knowledge of internal medicine which the candidate must demonstrate to the board in order to justify it in certifying that he is competent to practice internal medicine as a specialty. The responsibility of acquiring the knowledge rests with the candidate. The responsibility of maintaining the standards of knowledge required for certification devolves on the board.

APPLICATION

Candidates for examination must make their application on a prescribed form which may be obtained from the office of the Assistant Secretary-Treasurer.

The application must contain a record of the candidate's premedical and medical training as well as of internships, residencies, graduate study, hospital or dispensary staff appointments, teaching positions, service in the armed forces, membership in medical societies, medical papers published and the names of three or more well known internists to whom the board may write for professional and character reference.

The application must be accompanied by one recent signed photograph of the candidate mounted on the application, and the registration and examination fee of $40, which fee will cover both the written and oral examinations. An additional fee of $10 will be required when the certificate is issued.

A fee of $20 is required for each additional oral examination.

Candidates who have taken one written examination or one oral examination while on active duty overseas as a commissioned officer in the United States Army, Navy, or Public Health Service will be authorized to take a fourth written examination or a fourth oral examination if necessary. This regulation will not apply to candidates in the armed forces who took their written or oral examinations in the United States.

METHOD OF EXAMINATION

The examinations for certification by the board comprise two parts: Part I is written; Part II is clinical and is an oral examination. The written examination is held simultaneously in different sections of the United States and Canada on the third Monday of February and October of each year. This examination is divided into a morning and afternoon period, for each of which three hours are allowed. The questions asked are framed in such manner as the board elects; in general, there will be questions designed to test the applicant's knowledge of applied physiology, anatomy, physiological chemistry, pathology, bacteriology and pharmacology as related to internal medicine, and his basic clinical acumen.

Candidates must pass the written examination before admission to the oral examination will be authorized. The oral examination is conducted under the direct supervision of the board. It is held near the time and place of the annual meetings of the American Medical Association and the American College of Physicians. The examination is conducted at the bedside of the patient. Each candidate is assigned 2 or more patients and is expected to be sufficiently familiar with whatever problems present themselves to satisfy the board of his clinical expertness.

REEXAMINATION

Effective Jan. 1, 1946, not more than three written examinations will be authorized. The interval between the first and the second written examination will be one year. The interval between the second and the third written examination will be not less than two years. A longer period may be required by the board. A fee of $10 is required for each additional written examination.

This ruling does not make it mandatory for a candidate to repeat the examination within one or two years, since each candidate may elect a longer interval.

Not more than three oral examinations are authorized. The interval between the first and the second oral examination will be one year. The interval between the second and the third oral examination will be not less than two years. A longer period may be required by the board. Candidates may elect a longer interval if desired. A fee of $10 is required for each additional oral examination.

CERTIFICATES

The certificate issued by the American Board of Internal Medicine shall be in such form as to comply with the articles of incorporation and the by-laws and shall be signed by the officers and members of the board and shall bear the official seal of the board.

Certificates of the board will be issued to candidates who have satisfactorily completed the written and oral examinations and have been found qualified by the board to practice the specialty of internal medicine. Specialty certification will be designated on the certificate, for those so certified.

ADVISORY BOARDS

Allergy, cardiovascular disease, gastroenterology and pulmonary diseases are recognized specialties.

All candidates must pass the written and oral examinations in internal medicine before admission to examination in a specialty of medicine. The specialty examinations are oral

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only and may be taken the day following the examination in general medicine or at any other regularly scheduled oral examination.

Applications for consideration in the specialties referred to must be approved by the advisory board concerned and confirmed by this board.

Application forms will be forwarded upon request to the office of the Assistant Secretary-Treasurer.

AMERICAN BOARD OF NEUROLOGICAL SURGERY

MAX M. PEET, Chairman, Ann Arbor, Mich.
WINCHELL MCK. CRAIG, Vice-Chairman, Rochester, Minn.
WILLIAM J. GERMAN, Secretary-Treasurer, 789 Howard Avenue, New Haven 4, Conn.
A. W. ADSON, Rochester, Minn.
C. C. COLEMAN, Richmond, Va.
LEO M. DAVIDOFF, New York.
JOSEPH P. EVANS, Cincinnati.
HOWARD C. NAFFZIGER, San Francisco.
ERIC OLDBERG, Chicago.
BRONSON S. RAY, New York.
R. GLEN SPURLING, Louisville, Ky.
HARRY WILKINS, Oklahoma City.

Eligibility for Examination: To be eligible for examination and certification by the Board, all candidates must possess the preliminary and basic medical qualifications required by the Advisory Board for Medical Specialties as applied to all specialties as follows:

A. General Qualifications

1. Moral and ethical standing in the profession satisfactory to the Board of Directors.

2. Membership in the American Medical Association or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

3. Those who limit their surgical activities to the practice of neurological surgery.

4. It shall be discretionary with the board to accept for examination candidates who have been in practice more than six years but whose formal training fails to meet the full requirements.

5. Properly qualified candidates who are permanent residents in and citizens of other countries and are legally qualified to practice medicine there, and who have received their training in neurological surgery in the United States of America or Canada may apply for certification by The American Board of Neurological Surgery.

B. Professional Standing

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school which is acceptable to the American Board of Neurological Surgery, Inc.

2. Completion of a surgical internship of not less than one year in a hospital approved by the same Council, or its equivalent in the opinion of the Board.

C. Special Training

A period of graduate study in a recognized graduate school of medicine of not less than three years beyond the intern year, or in an approved hospital or under a sponsorship acceptable to the American Board of Neurological Surgery, Inc., for the training of neurological surgeons.

This period of special training shall be of such a character that the relation of the basic sciences of anatomy, physiology, pathology, bacteriology and biochemistry is emphasized. Knowledge of these sciences as applied to practice of neurological surgery will be required in the examination.

An additional period of not less than two years in the practice of neurological surgery.

Applications

An application on the official application blank in such form as may be adopted from time to time by the Board of Directors, in order to be considered at any meeting, must be in the hands of the secretary-treasurer of the board not less than sixty days before the date of such meeting.

The secretary-treasurer of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary-treasurer may deem desirable, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary-treasurer its recommendation whether or not the applicant is acceptable. The certification of a candidate shall be approved by a majority of the members of the entire board at any meeting held for such certification.

Payment of Fees

The fee for certification, with or without examination, shall be seventy-five dollars ($75).

The candidate for examination on filing his application shall accompany it with an application fee of twenty-five dollars ($25). When notified by the secretary-treasurer that he is eligible for examination he shall send the examination fee of fifty dollars ($50) to the Secretary-Treasurer at least two weeks before the date of the examination. The application fee will be returned if the candidate is not accepted for examination.

Reexamination

A candidate who has failed in one examination is eligible to reexamination in the subject, or subjects, in which he failed, within three years, on payment of a reexamination fee of ten dollars ($10). A candidate who has failed in one examination and who does not apply for reexamination within three years or a person who has applied within that time but who has failed a second time will be considered a new applicant.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY

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Prerequisites to Eligibility

Each applicant before he may become eligible to receive a certificate.

1. Must have had conferred upon him a degree in medicine by an institution of learning approved by the Advisory Board for Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

2. Must establish in a manner satisfactory to the Board of Directors that he is a physician duly licensed to practice medicine, and

(*a*) That he is of high ethical and professional standing.

(*b*) That he has received adequate training in both obstetrics and gynecology as a specialty. Training in one branch only is not acceptable. The term "adequate training" as used here shall be construed as meaning at least six months, full time, in the branch of either obstetrics or gynecology relegated to a minor role in a candidate's training and preference for practice.

3. Must make application for investigation of his credentials and a survey of his character.

4. Must assure the board that he is limiting his practice to obstetrics and/or gynecology and that he intends to continue to do so, except for military duties, having limited for at least

six months before making application. Effective Dec. 31, 1949, candidates will not be accepted who have not been in practice limited to the specialty for a minimum period of at least two years following completion of their specialty training.

5. Must have membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

This board will not accept applicants for examination who are not full citizens of the United States or of Canada, though they be residents of either country. Foreign born applicants must have been certified by either the National Board of Medical Examiners or licensed to practice medicine in the United States or Canada by a state or provincial board of licensure. Notarized statements, not original citizenship papers, must be furnished when the application is filed attesting to the fact of full citizenship in the United States or Canada, if the applicant is foreign born. Further, there will be required a probationary period of at least three years from the date of licensure in the practice of medicine in these countries before such a candidate may be admitted to examination.

The board has ruled that physicians who accept male patients in their private or other practice, for operative or other care, cannot be regarded as specialists in obstetrics and gynecology, except by special ruling when this is related to active military duty.

This board deprecates engagement in fields of practice other than that in which candidates profess to be specialists. The board does not exclude from examination, however, obstetricians-gynecologists who practice abdominal surgery and urology in the female, as well as breast surgery, because of the correlation of these activities.

Military service or any other similar patriotic service, such as work with Selective Service boards, etc., has not been construed as nonlimitation of practice in violation of the board regulations.

REQUIREMENTS

The requirements for all candidates will be uniform as follows:

1. Completion of at least one year intern service in a hospital approved by the Council on Medical Education and Hospitals of the American Medical Association. This need not be a general rotating internship, although this latter is preferred.

The Board accepts the fifth or "intern" medical school year required at some schools in lieu of the usual fifth or intern "clinical training" year following graduation.

A second year general internship is to be considered as one of a candidate's years of practice. No credit will be given toward special training during a second year general internship.

2. A minimum of seven years of practice after the intern year, including at least three years of residency training in approved institutions, or adequate preceptorship training and including at least six months' post-training practice limited to the specialty. Effective Dec. 31, 1949, this latter requirement shall be increased to two years, at least, post-training practice limited to the specialty.

3. The period of special training should emphasize the relation of the basic sciences, anatomy, pathology, physiology, biochemistry and bacteriology, to the application of surgical principles which are fundamental in all branches of surgery. In addition, the candidate must understand and be trained in the following subjects: viz., the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics, wound healing, etc.

4. Credit for graduate courses in the basic sciences which involve laboratory and didactic teaching rather than clinical experience or opportunities will be given for the time spent up to a maximum period of not more than six months regardless of the duration of the course.

PRECEPTORSHIPS

As a substitute for special residency training, service with a qualified obstetrician/gynecologist preceptor, preferably one who has been certified by the board, may be acceptable. The exact time basis for this has not been specified, and each case must be reviewed and decided individually by the Credentials Committee after the application is submitted in the regular manner. The time allowance for this type of training will vary with the amount of work done with the preceptor. It is unusual for more than six months' credit to be given for one year of preceptorship training.

An acceptable preceptor is a specialist in obstetrics and gynecology of long experience, preferably certified by this board. His volume of office and hospital practice must be large enough to offer ample opportunity for the candidate's training. Preceptor training should include participation in procedures of office and hospital practice, including operative and obstetric responsibilities, with adequate time devoted to the studies of basic sciences and pathology and the study of current literature pertaining to this specialty. The preceptor should supervise closely the candidate's work and keep an informative record of the candidate's performance in order to facilitate the board's efforts in evaluating the adequacy of the candidate's training.

APPLICATION AND FEES

Application must be made on a special blank which will be furnished by the secretary's office, 1015 Highland Building, Pittsburgh 6, Pa., and must be forwarded with the other required credentials and the application fee to the secretary's office at least ninety days prior to the scheduled date of the Part I examinations.

The application fee is $25 and is not returnable.

The examination fee is $100 and is payable when the candidate is notified of acceptance for examination. This fee is not returnable after the candidate has been officially accepted by the Credentials Committee and notified to report for examination.

The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners and associate examiners serve as such without compensation other than actual expenses.

Applicants declared ineligible for admission to examination may request reopening of their applications within two years of the filing date without payment of an additional application fee. When a candidate requests that his application be reopened, he must supply the board with information which may justify such further consideration. A request for the reopening of an application declared ineligible by reason of insufficient training, nonlimitation of practice or similar items may not be made within two years. The request must have adequate supporting evidence to warrant reconsideration. This time may be reduced under exceptional circumstances.

After two ineligibility or postponement rulings on any candidate's application, an entirely new application must be submitted (with or without fee, according to current requirements) in order to bring data down to date. The essential feature of this should be evidence of additional training and experience.

Applicants declared eligible but who fail to exercise the examination privilege within three years of the date of filing the application are required to file a new and current application and to pay a new application fee.

An applicant entering military service during any national emergency and assigned to work in general surgery under conditions acceptable to the Credentials Committee may receive credit up to a maximum of six months acceptable toward his three required years of specialty training. He should specifically request such credit in making his application. The additional time may be applied toward the years of practice requirement.

An applicant serving under military orders in an Army or a Navy hospital in an obstetrical and/or gynecological service under supervision will be given the same credit as if he were working under a preceptor, if these departments are supervised diplomates of this board or recognized obstetricians-gynecologists. He may obtain full residency credit if such hospital is officially approved and listed for residency training in this specialty.

Additional time in military service with any type of general medical assignment may be applied toward the board's years of practice requirement. The Credentials Committee of the board will review and give consideration to each individual case.

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Candidates should offer as sponsors or references two diplomates of this board with whom they are presently in contact, rather than men under whom they served as residents only. It is required that sponsors be from the candidate's community and currently acquainted with the candidate and his ability in his practice of the specialty.

Upon notice of acceptance for admission to examination, examination fee is due and also case records, which should be shipped by the candidate to the secretary's office as soon as possible and not later than the date of the Part I written examination.

The candidate should make immediate acknowledgment of his notice of acceptance, at which time he will notify the secretary's office approximately when to expect his case reports.

EXAMINATIONS

Part I examinations are scheduled annually for the first Friday in February. Grades cannot usually be mailed from the secretary's office until after April first following examination. Arrangements will be made for candidates to report in any convenient city where there may be a diplomate of this board to conduct or supervise the written examination which will be sent out from the board's office under sealed cover.

Special arrangement will be made through senior officers for conducting the written portion of the Part I examination for men in military service. Such candidates are requested to keep the secretary's office informed at all times of changes in their mailing addresses.

All applicants accepted for examination will be required to obtain a passing grade in both the written examination and a review of case reports (Part I), before becoming eligible for the oral-clinical and pathology examinations (Part II). The passing grade for the written examination and case reports is 75 per cent. A candidate whose grade in either or both falls below 75 per cent is conditioned.

Reexamination for the removal of conditions in Part I may be taken after one year but within three years after the first failure, without payment of an additional fee.

Candidates who successfully complete the Part I examination proceed automatically to the Part II examination held later in the year.

Candidates appearing for reexamination under a new application after two previous failures will not be required, if they have passed all or part of the Part I examinations on their first application, to repeat such examination items already successfully cleared.

PART I

Examination consists of:

1. A comprehensive written examination, conducted annually, including questions on both obstetrics and gynecology and related basic sciences. The written examination will be limited to a maximum period of three hours.

2. The filing, not later than the date of the written examination, of twenty-five obstetrical and gynecological case reports, in condensed form. Five cases may concern major illnesses, not necessarily operative. All must be of patients for whom the candidate was personally responsible. Grades on case reports submitted for review prior to the written examination will be announced simultaneously with those of the latter; candidates who take the written examination but fail to submit case reports on or before the date of the written examination cannot be given the grade on the latter until their case reports have been received and graded.

PART II

The oral-clinical and pathology examinations given all candidates are conducted by the entire board and the associate examiners usually near the time and place of the annual meeting of one or more of the national societies represented on this board. Advance announcements of examination dates and place will be made in medical journals throughout the country.

Examination consists of:

1. Oral examination before two to four examiners.

An endeavor is made to adapt the details of the oral examination to each candidate's experience and practice. The examination is particularly directed to ascertain his familiarity with recent obstetrical and gynecological literature, the related basic sciences, the breadth of his clinical experience, and his general qualifications as a specialist in obstetrics and gynecology.

2. Pathology examination.

The candidate is expected to identify and to discuss several obstetrical and gynecological pathologic specimens and sections.

Examiners report orally upon each candidate to the assembled board, after which the results of their investigations are considered jointly by the entire board and associate examiners. After a general consideration of the details of the candidate's oral and pathology examinations, including a review of his capability and general adaptability, the candidate is passed or failed by the entire board.

The final action of the board is based upon the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examination.

No conditions are given in Part II of the examination. When a candidate fails in Part II of the examination, he is not required to repeat Part I, but to take a reexamination in the oral-clinical and pathology portions only. One reexamination may be taken within three years of the original examination or first failure without reapplication or payment of an additional fee.

The candidate may reappear at the examination following the one failed by him. In applying for reappearance he should outline additional training or experience acquired in the interim. The board may, at its discretion, deny the candidate the privilege of reexamination.

Failure to exercise the privilege of reexamination within three years entails the filing of a new application with the usual application and examination fees.

After two failures in either Part I or Part II on the first application, the candidate may reapply and be readmitted to examinations once only. Exceptions to this ruling can be made only by action of the entire board in annual session, usually to be based upon evidence of additional training and experience sufficient to warrant such action.

AMERICAN BOARD OF OPHTHALMOLOGY

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REQUIREMENTS

All candidates must comply with current board regulations regardless of time of filing application.

The secretary is not permitted to make decisions as to requirements. These rulings are made only by the Committee on Credentials after reviewing the candidate's formal application.

PREREQUISITES

1. High ethical and professional standing.

2. Full citizenship in the country where the candidate practices. (Limited to countries of North and South America, their possessions and territories.)

3. A degree from a medical school of high standing, satisfactory to the board and approved by the Council on Medical

Education and Hospitals of the American Medical Association. An applicant whose training has been received outside of the United States and Canada must present credentials satisfactory to the board and is required to have the certificate of the National Board of Medical Examiners if he has been in practice less than ten years.

4. Completion of an internship of not less than one year in a hospital approved by the same Council.

5. Not less than thirty-six months (a total of sixty months is required of candidates practicing both ophthalmology and otolaryngology) of combined study, training and practice of ophthalmology in approved medical schools, hospitals, clinics, dispensaries, laboratories, preceptorships and private practice.

GENERAL REQUIREMENTS FOR ALL CANDIDATES

1. Application forms must be filled out completely and accurately. Letters of endorsement, together with any other required credentials, must be sent to the secretary's office before the deadline date.
2. Fee of $100 remitted with application.
3. A list of papers or books published.
4. Written qualifying test.
5. Practical examination.
6. Special review of ophthalmic surgery.
7. Membership in the American Medical Association, or such other societies as are recognized for the purpose by the Council on Medical Education and Hospitals of the American Medical Association.

FEES

For written test and original examination, $100 (as mentioned above).

For reexamination in all subjects, $75.

For reexamination in one or more subjects, $35.

Written qualifying test must be taken within three years of date of application. Thereafter new application and fee are required.

The fees have been carefully computed on a basis of cost of examinations, and are used entirely for administrative expenses. Examiners serve without compensation other than actual expenses.

SPECIAL TRAINING

(Applicable so far as practicable after 1948)

This shall include:

1. Graduate study of the basic medical sciences which are fundamental to the intelligent practice of ophthalmology, particularly: anatomy, histology, embryology, optics, physiologic optics, visual physiology and psychology, pathology, bacteriology, pharmacology, disorders of ocular motility and binocular vision, perimetry, and in the skilful adjustment and use of instruments such as the ophthalmoscope, retinoscope, slit lamp and microscope. Mere factual knowledge is not sufficient; the candidate must have had training in the application of these subjects and in their use in clinical ophthalmology, especially in refraction.

2. Active clinical experience in approved hospitals, clinics, dispensaries and private practice. Library and laboratory facilities should be utilized for intensive study of cases.

The subject matter to be covered under 1 and 2 is outlined in the syllabus prepared by the board.

These requirements may be met in various ways:

BASIC STUDIES

Anatomy
Embryology and developmental abnormalities
Biochemistry
Pathology
Bacteriology and immunology
Optics and physiological optics
Ocular physiology
Relation of eye to general diseases
Therapeutics and pharmacology
Neuro-ophthalmology

These may be covered by:

A. *Graduate Study.* — By a curricular course in the basic sciences related to ophthalmology in an approved graduate medical school.

B. *Postgraduate Study.* — By courses in individual basic sciences related to ophthalmology as given at various approved institutions. The Home Study Course of the American Academy of Ophthalmology and Otolaryngology is recommended.

C. *Residency.*—By advanced study of these subjects during a residency and by correlation of the principles involved with clinical problems.

D. *Research, Fundamental and Clinical.* — By the detailed study, under supervision or as assistant to an experienced research worker, of some problem or topic which brings the basic sciences into direct relation with the concrete clinical problem.

CLINICAL EXPERIENCE

A. By residency in an approved hospital. The most desirable of these residencies have regular lectures covering the entire field of clinical ophthalmology and of the basic subjects as applied in clinical practice. Many of these have seminars at which residents report cases which they have carefully worked up. These are discussed by the other residents and by the staff and the method of presentation as well as the subject matter critically considered.

B. By residencies in hospitals where regular instruction by lectures and quizzes and seminars is not available. The syllabus issued by the board will guide the resident in his selection of topics to be studied.

C. By fellowships in ophthalmology.

D. By preceptorship with a well-trained and critical ophthalmologist.

E. After completing a residency it is of great advantage to secure a position in a clinic as fellow or assistant. This may require only part time work, but due credit will be given. Its value to the student depends on how much study he puts into it and on how competent his seniors are.

F. Research under competent critical and sympathetic supervision will give first hand insight into (1) the methods whereby old knowledge was and new knowledge is acquired and (2) the pitfalls which accompany attempts to enlarge the sphere of knowledge. Only in this way can the candidate evaluate basic facts in the intelligent critical way which is expected of the specialist in practice.

G. The candidate who cannot secure the type of residency he desires should not despair, for his progress depends far more on how he uses his opportunities than on the opportunities themselves.

WRITTEN QUALIFYING TEST

Before being accepted for examination, candidates are given a written test to ascertain their qualifications. The questions may cover any part of ophthalmology and are especially devoted to the basic studies as listed above. The written test will be given in several principal cities at the same time. Choice of cities is determined largely by the geographical distribution of candidates. Candidates found acceptable will be notified to appear for a subsequent practical and clinical examination in ophthalmology.

EXAMINATIONS

Examinations will be held annually at or near the time and place of the meeting of the American Medical Association; also at other times and places at the discretion of the board, depending on the number of applications from any region.

The board reserves the right to limit the number of candidates to be admitted to any one examination.

Candidates must be examined in all subjects listed in the sections titled Basic Studies and Practical and Clinical Examination. The time spent in preparation will count less than the knowledge and experience acquired as shown on examination.

PRACTICAL AND CLINICAL EXAMINATION

The subjects of the practical examination are as follows: (1) External Diseases, (2) Ophthalmoscopy, (3) Histopathology, (4) Refraction, (5) Motility, (6) Ophthalmic Surgery, (7) Perimetry.

1. *External Diseases of the Eye and Adnexa.* — Various methods of examination, diagnoses and treatment.

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2. *Ophthalmoscopy.*—Patient will be examined by the candidate and the findings described or drawn. A candidate is required to bring his own ophthalmoscope.

3. *Pathology.*—The candidate will demonstrate familiarity with general clinical pathology as well as the etiology, pathology and bacteriology of diseases of the eye. He will be asked to examine microscopic slides and to recognize normal and pathologic histology of the eye.

4. *Refraction.*—A candidate will examine patients and show mastery of various methods, and of the principles of refraction and of retinoscopy. He should bring his own retinoscope.

5. *Motility.*—The candidate will demonstrate upon patients his familiarity with routine methods of examination and diagnosis.

6. *Ophthalmic Surgery.*—A candidate will demonstrate his surgical technic upon animal eyes. He must bring his own equipment for performing an extracapsular combined extraction of the lens.

7. *Perimetry.*—The candidate will be given an opportunity to examine patients by use of the arc perimeter, the tangent screen and the stereocampimeter. He may also be required to interpret charted fields.

SPECIAL REVIEW OF SURGICAL CASES

The board now requires of all candidates a list of ophthalmic operations performed within two years prior to examination. This list is to be presented with application.

The operations should be listed in groups of each type of surgery. The numbers of operations in each group must be totalled and the total number of all operations shown. This list must contain the following data:

1. Date.
2. Condition or conditions for which operation was performed.
3. Name and character of operation.
4. Identification by hospital or clinic number, or the name of a consultant or confrere who was present at the time of operation.

Circumstances which prevent any candidate from fulfilling this requirement should be fully explained, with detailed statement of candidate's surgical experience.

REEXAMINATION

Candidates may be reexamined as often as they desire on satisfactory evidence of adequate additional preparation and payment of reexamination fee. A minimum of one year must elapse between examinations when a candidate is conditioned in one or more subjects. A minimum of two years additional preparation is required of candidates who fail in all subjects. The board may, at its discretion, deny the candidate the privilege of reexamination.

AMERICAN BOARD OF ORTHOPEDIC SURGERY

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QUALIFICATIONS OF CANDIDATES

There are certain general qualifications applicable to all candidates for examination Part I and Part II. In addition, candidates must have had special training in orthopedic surgery on one of the approved plans hereinafter described:

GENERAL QUALIFICATIONS

(*a*) He must be a citizen of the United States or Canada.

(*b*) He must be a graduate of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States or Canada, his credentials must be satisfactory to the Council on Medical Education and Hospitals of the American Medical Association and to the National Board of Medical Examiners; he must have engaged in the practice of orthopedic surgery in the United States or Canada for at least three years prior to submission of his application.

(*c*) He must have served an internship in a general hospital acceptable to this board. Beginning in 1951 and thereafter, applicants for Part I of the examinations must have had a year of resident training in surgery in addition to their internship.

(*d*) He must be duly authorized to practice medicine in the state or province of his residence.

(*e*) He must be ethical and have good professional standing.

(*f*) He must be a member of the American or Canadian Medical Association before he can be declared as eligible for Part II of the examinations.

SPECIAL QUALIFICATIONS

The trainee should realize that preparation for the specialty of orthopedic surgery should include a sound knowledge of anatomy, pathology, physiology, bacteriology and biochemistry, as these basic sciences apply to orthopedic surgery. In addition, he should have observation and first hand experience in the diagnosis, treatment, operative and postoperative care of recent and old fractures and other orthopedic problems of adults and children. However, when so desired, the trainee may substitute additional experience in fractures and adult orthopedics for the work in children's orthopedics as outlined in subsequent paragraphs.

Many hospital services approved for orthopedic training have all phases represented in such proportion that they can be given concurrently over a three year period and provide a well balanced program. Such a plan of training is probably the most desirable. However, it is possible for one to obtain satisfactory training by taking various phases of the work in different institutions (matched training). In order to help the trainee plan a well balanced program of matched training the board suggests that it be arranged as follows: adult orthopedics, one year or one third of the training period; fractures, six months or one sixth; basic sciences, six months or one sixth, and children's orthopedics, one year or one third (as previously indicated a second year of fractures and adult orthopedics may be substituted for the year of children's orthopedics).

The clinical phases of training may be obtained in hospitals or under preceptors where adequate facilities are not available for instruction in the basic sciences. In such cases the trainee should spend at least six months in the graduate department of a medical school which can offer adequate facilities and instruction in these subjects.

Upon completion of a year of internship and a year of resident training in surgery (the latter requirement being applicable to those who apply for Part I of the examinations in 1951 and thereafter), the trainee may take his special work in orthopedic surgery by one of three plans: (1) resident training on an orthopedic service of a hospital approved by the Council on Medical Education and Hospitals; (2) combined resident training and assistantship. (3) preceptorship.

1. *Resident Orthopedic Training.*—The applicant should serve for three years as a resident in orthopedic surgery on services approved by the Council on Medical Education and Hospitals. When taken as matched training, each of the required phases should be taken on a service approved for that particular phase and all phases must be covered. If the trainee elects to substitute additional adult orthopedics and fractures for a year of children's orthopedics, the training that is substituted must be acquired on an approved orthopedic service and the total period of resident training must be three years. The type of credit available in various institutions is indicated by the symbols "A," "C," "F" and "S" in the lists of approved residencies published by the Council on Medical Education and Hospitals.

2. *Combined Resident Training and Assistantship.*—In special instances, with the prior approval of the Committee on Resident Training, the board will recognize for not over two years of

training in orthopedic surgery periods of training in which the candidate combines work as resident on a hospital service, with part time assistantship to an orthopedic surgeon certified by the American Board of Orthopedic Surgery, provided that the major part of his time is spent by the candidate in the hospital service.

3. *Preceptorship.*—In certain instances, the board may recognize training under the preceptorship plan. Before taking training under a preceptor, the applicant must have completed an internship and a year of resident training in surgery. The preceptor must be a diplomate of the board whose clientele is large enough to give the trainee experience in all phases of orthopedic work. The trainee will be required to serve as full time assistant for five years, and during this period the preceptor should devote special periods of time each week, outside of the routine hours employed in the hospital and office practice, to assist the trainee with organized courses of study similar to those covered during resident training. If facilities and instruction in the related basic sciences are not available, the trainee should spend at least six months of this five year period as a student in a recognized graduate medical school where these subjects can be provided. Upon completion of the five years under a preceptor, the trainee should engage in practice, limited to orthopedic surgery, either alone or associated with a diplomate, for a further period of five years, before becoming eligible for Part II of the examinations.

Practice Requirements

These requirements are intended not only to test the applicant's determination to practice in an ethical manner and limit his practice to the special field of orthopedic surgery, but also his ability to increase his scientific knowledge. Prior to making application for Part II, applicants who took training as residents on approved orthopedic services should have had at least two years of experience in practice limited to the field of orthopedic surgery. Applicants who had preceptorship training, must have had five years of practice limited to the specialty. Applicants who did not take children's orthopedics, but substituted adult orthopedics and fractures instead, must have limited their practice to the same field in which they were trained.

Credit for Service with the Armed Forces

Because in some instances applicants who served with the armed forces acquired good training in orthopedic surgery, credits up to a maximum of two years may be allowed. Such credit, however, may be granted only on presentation of evidence that such service is, in the opinion of the Committee on Eligibility, equivalent to similar periods of approved resident training. Those requesting credits for training acquired while in the service should submit their completed Record of Professional Assignments with their application.

(*a*) A year of orthopedic experience with the armed forces, when approved by the committee, may be accepted to replace one of the three required years of orthopedic training.

(*b*) A second year of orthopedic service with the armed forces may be credited as a year toward the practice requirement.

(*c*) Credit for military service will be considered for assignments covered between January 1941 and July 1946.

EXAMINATIONS

Application for Examination

Applications for examinations, Part I and Part II, shall be filed with the secretary upon the prescribed forms and shall be accompanied by the prescribed fees which the board may fix from time to time. The required data shall be entered in typewritten form and the application must be accompanied by an unmounted autographed recent photograph of the applicant. The names of two diplomates of the board shall be supplied by the candidate for reference.

The completed application must be filed with the secretary at least sixty days prior to date set for examination.

The data submitted in each application must be checked and verified in the offices of the American Medical Association.

Letters of reference shall be obtained by the secretary from diplomates whose names have been submitted by the applicant. Additional information may be sought from other available sources.

If an application has been approved, the candidate will be notified by the secretary and should then forward the required fee for the examination, Part I or Part II, as the case may be.

Examinations

Applicants for certification will be required to take the examination of the Board in two parts. No applicant shall be permitted to take both parts of the examination at the same time, nor can he be permitted to take Part II until he has successfully passed Part I. These may be held in different places and on different dates to meet the needs and convenience of candidates and board members. Announcement of the time and place for examination will be made through the medical journals.

Examination, Part I

(*a*) *Eligibility for Examination, Part I.*—Minimum requirements for eligibility for examination, Part I, shall consist of completion of an internship (and a year of resident training in surgery effective for Part I in 1951), followed by at least a year of resident training in orthopedic surgery on an approved service.

Applicants who have completed more than this minimum requirement are eligible for Part I at any time up to completion of their full requirements; however, candidates who are fully qualified must submit application for Part I and successfully pass this examination before submitting application for Part II.

Candidates who make application based on preceptorship training will be considered by the Committee on Eligibility upon completion of an internship and a year of resident training in surgery, followed by five years as a full time assistant under a preceptor who is a diplomate of the board.

(*b*) *Examination, Part I.*—This part shall consist of a written examination and oral interviews covering those parts of anatomy, pathology, physiology and biochemistry related to surgery and orthopedics. In addition there will be questions on fundamental surgical principles, elementary fractures and orthopedic procedures, history taking and physical examination.

Examination, Part II

(*a*) *Eligibility for Examination, Part II.*—Candidates applying for examination, Part II, must have successfully passed Part I and must have completed the prescribed training and practice periods, as defined in Article 7, Section 2.

A separate application for Part II must be completed and forwarded to the secretary, together with the required application fee, at the specified time.

(*b*) *Examination, Part II.*—This part of the examination will be given in only one city once each year. It will consist of oral quizzes and a written examination covering the advanced work in all phases of orthopedic surgery. The oral examinations will include an interview in anatomy, pathology, fractures, congenital and acquired deformities, static and postural defects and other orthopedic subjects.

(*c*) Applicants who have qualified with a year of children's orthopedics will have separate written and oral questions related to this phase of orthopedic surgery.

Reexamination

An applicant who fails to pass Part I or Part II of the examinations may be reexamined a second and third time in each part by paying the prescribed examination fee each time he is reexamined. Additional application fees are not required for reexamination. The applicant who fails must appear for his second or third reexamination within three years after the first failure. After three years a new application with the appropriate fee must be submitted.

After three successive failures in Part I or Part II of the examinations the applicant must have had additional graduate training in orthopedic surgery before submitting a new application.

TIMES AND PLACES FOR EXAMINATION

Examination, Part I, will be given probably during May of each year in various centers that will be designated by the board. The secretary will give applicants advance notice of the date, place and hour.

Examination, Part II, will be given in one place and probably not oftener than once each year. As a rule it will be in connection with the meeting of the American Academy of Orthopedic Surgeons and will precede the meeting.

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REQUIREMENTS

The following qualifications of candidates for examination are required by the Board:

1. A candidate acceptable for the examination (1) must have been a citizen of the United States (or Dominion of Canada) for at least three years; (2) must have been a graduate for four years or more (five years after 1950) of a medical school approved by the Council on Medical Education and Hospitals of the American Medical Association; (3) must have had at least one year's general internship in a hospital approved by the American Medical Association or other nationally recognized organization; (4) must be of good moral character and ethical in his professional relations. Graduates of foreign medical schools should have passed the examination of the National Medical Board. Candidates who have become naturalized citizens must give proof of their medical education and graduate training. Candidates from foreign countries must be permanent residents and citizens thereof, and meet the general requirements above.

2. A candidate must be a member of the American Medical Association, the Canadian Medical Association, or other medical societies of equal standing recognized by the Council on Medical Education and Hospitals of the American Medical Association.

3. Each candidate must have had acceptable training and be competent in the applied basic sciences fundamental to the intelligent practice of otolaryngology. Anatomy of the ear, nose, throat, neck, chest, esophagus and nervous systems, pathology, bacteriology, physiology didactic otolaryngology and fundamentals of surgery are required. These requirements may be fulfilled in residency training or in an organized postgraduate course.

4. EFFECTIVE UNTIL 1950—a candidate must have completed two years' residency in otolaryngology or three years' residency in ophthalmo-otolaryngology and have restricted his practice to otolaryngology (or ophthalmo-otolaryngology) for a minimum of three years or four years respectively, which may include the period of training.

5. EFFECTIVE UNTIL 1950—five years' practice limited to otolaryngology (or ophthalmo-otolaryngology) may be accepted in lieu of the requirements in section 4, if the training has been under guidance or preceptorship which meets the approval of the Credentials Committee of the Board.

6. EFFECTIVE AFTER JULY 1, 1950—candidates must have completed a course of three years' study in otolaryngology, or four years' study if ophthalmology is included (in which case there must be a minimum of 50 per cent spent in the study of otolaryngology). The three years may have been spent in a residency which includes study of the basic sciences as specified in section 3, approved by the Board and the Council of Medical Education and Hospitals of the American Medical Association, or the candidate may have completed an organized course in the basic sciences and approved training in a residency which would give a total of three years' study in the specialty. A year's residency in surgery or medicine, or a two years' rotating internship, may be accepted as the equivalent of one year's training in otolaryngology. In addition to the above, the candidate must have had a minimum of one year in practice limited to the specialty.

7. EFFECTIVE AFTER JULY 1, 1950—a candidate, in addition to the requirements in sections 1, 2 and 3, may qualify for examination if he has limited his practice to otolaryngology (or ophthalmo-otolaryngology) for six years under the supervision and direction of practitioners in the specialty approved by the board, in association with a hospital staff approved by the Council on Medical Education and Hospitals of the American Medical Association.

8. Candidates who canot meet all the above requirements may be accepted for examination in exceptional circumstances, but only upon the recommendations of the board.

9. A limited certificate in one of the subspecialties of otolaryngology may be issued at the discretion of the board to an exceptionally well qualified individual in the special field in which the certificate is desired.

APPLICATION AND FEES

1. Application must be made in duplicate on special blanks procured from the secretary. The completed application blanks must be returned to the secretary, together with the other required credentials, at least one hundred and twenty days in advance of the examination at which the candidate desires to appear.

2. The applications must be accompanied by two small photographs of the candidate, together with verification of the period of enrolment from the institutions where training in otolaryngology was obtained, and the names of two or more otolaryngologists, preferably diplomates of the board, from the

vicinity of the candidate's place of residency, to be used as references.

3. The fee for the examination is $100, no part of which is returnable. Of this sum $25 must accompany the application. No application will be acted upon until the $25 application fee is received. The balance of the fee—$75—must be paid to the secretary upon notification that the candidate has been accepted for examination and at least ninety days in advance of the date of examination. A reexamination fee of $50 is required of candidates conditioned in one or more subjects.

4. The fees have been carefully computed on a basis of cost of examinations and are used entirely for administrative expenses. Examiners serve without compensation other than actual expense.

5. The application remains valid for three years. An applicant must appear for examination within this time or forfeit the fee.

6. Candidates whose credentials have been found satisfactory and who meet the requirements of the board will be notified ninety days prior to the date of examination. The number of candidates who can be admitted to any one examination is limited. Due to the large number of applications on file, delay in assignment for examination may be inevitable. Appointments will be given in the order applications are accepted.

7. The board, acting as a committee of the whole, reserves the right to reject an applicant for any reason deemed advisable and without stating the same, and the action of the board shall be final.

EXAMINATION

Examination will be held at such time and place as the judgment of the board may dictate. Advance notice of examinations will be given in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION and the several special journals devoted to otolaryngology. So far as is possible these will be held twice a year at, or near, the time and place of meeting of the American Medical Association, or special societies, and of the American Academy of Ophthalmology and Otolaryngology. The examinations cover from two to four days.

Scope.—This examination encompasses all phases of otolaryngology and peroral endoscopy, including faciomaxillary surgery, and surgery of the neck, excluding the thyroid.

The type of examination is as follows:

1. Clinical, covering the actual handling of patients, including history taking, physical and functional examinations, the use of laboratory and x-ray findings and a discussion of differential diagnosis.

2. Didactic, oral examinations covering all phases of otolaryngology.

3. Gross and microscopic pathology.

4. A written examination may be included when the board deems this advisable.

REEXAMINATION

A candidate who is conditioned in examination may be admitted to a subsequent examination after one year and within the three year period dating from his application, upon payment of an additional fee of $50 and one hundred and twenty days' notice of intention to appear is required.

Candidates who have failed in the examination may be accepted for reexamination upon recommendations of the credentials committee. Satisfactory evidence of further study and progress will be required. A new application must be filed. The fee for reexamination for such candidates is $100, $25 of which must accompany the application. The balance of the fee, $75, will be due upon notification of acceptance.

CERTIFICATION

1. A certificate granted by the board does not of itself confer or purport to confer any degree or legal qualifications, privileges or license to practice otolaryngology, nor does the board intend or attempt in any way to interfere with or limit the professional rights and activities of any duly licensed physician. Its aim is to improve the standards of practice of otolaryngology and to certify as specialists those who voluntarily comply with its requirements and regulations.

2. The final action of the board is based upon the candidate's ethical and professional record, training and attainments, as well as on the results of his formal examinations.

AMERICAN BOARD OF PATHOLOGY

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A. GENERAL QUALIFICATIONS

1. Satisfactory moral and ethical standing in the profession.

2. License to practice medicine or a certificate of the National Board of Medical Examiners.

3. Membership or associate membership in the American Medical Association or membership in a national society acceptable to the board by citizens of the United States (at present, American Association of Pathologists and Bacteriologists, American Society of Clinical Pathologists, American Medical Association, or American Society for Experimental Pathology). For citizens of other countries, membership in a national medical society of that country is required.

4. The applicant must devote his time primarily and principally to the practice of pathology.

B. PROFESSIONAL EDUCATION

1. Graduation from a medical school in the United States approved by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a medical school in other countries acceptable to the board.

C. SPECIAL TRAINING AND EXPERIENCE

1. The board admits candidates to examinations who are otherwise eligible and who have had either of two types of training and experience.

a. After five years, if four of the five years have been in institutions approved by the Council on Medical Education and Hospitals of the American Medical Association or by the board.

b. After eleven years if none of the training and experience has been in institutions so approved.

2. The specific requirements for those acceptable after five years are as follows:

a. Pathologic anatomy only.

(1) Four years of supervised study and training in an institution approved for residency training in pathologic anatomy by the Council on Medical Education and Hospitals of the American Medical Association or by the board. It is immaterial whether the candidate holds the title of resident or fellow or assistant. Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the preclinical departments of a university for one of the four years. In addition, time, not to exceed twelve months, spent in a department of pathology of an approved school of medicine after the completion of the second year of undergraduate study may be counted for full credit toward the four years.

(2) One additional year which may be a continuation of the preceding or may be independent practice of pathologic anatomy in a hospital approved by the American Medical Association or other institutions acceptable to the board.

b. Clinical pathology only.

(1) Four years of supervised study and training in an institution approved for residency training in clinical pathology by

the Council on Medical Education and Hospitals of the American Medical Association or by the board. It is immaterial whether the candidate holds the title of resident or fellow or assistant. Candidates may, at their own election, substitute not to exceed twelve months of a straight or rotating clinical internship or a fellowship or instructorship in any of the preclinical departments of a university, for one of the four years. Candidates, holding also a master's and doctorate degree in a special field of clinical pathology (bacteriology, serology, chemistry, parasitology or hematology) may obtain time credit for not more than twelve to twenty-four months toward the four years for this work regardless of whether it was taken before or after the medical degree. The evaluation of time credit will depend on how much of the broad field of clinical pathology was covered in graduate work.

(2) One additional year which may be a continuation of the preceding or may be independent practice of clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board.

c. Pathologic anatomy and clinical pathology.

(1) Four years of supervised study and training divided as follows:

(*a*) Two years of supervised study and training in pathologic anatomy as outlined in the preceding paragraph C-2-a-(1).

(*b*) Two years of supervised study and training in clinical pathology as outlined in the preceding paragraph C-2-b-(1). Candidates declared eligible before July 1, 1952 may at their own election substitute one year (twelve months) of a straight or rotating clinical internship for one year of this special training in clinical pathology. After July 1, 1952, all candidates applying for both pathologic anatomy and clinical pathology will be required to have two years of supervised training in clinical pathology.

(2) One additional year which may be a continuation of the preceding or may be independent practice of both pathologic anatomy and clinical pathology in a hospital approved by the American Medical Association or other institutions acceptable to the board. After July 1, 1952, candidates who elect to claim credit of one year for a clinical internship must take this fifth year as supervised study and training in clinical pathology in institutions approved for residency training in clinical pathology by the Council on Medical Education and Hospitals of the American Medical Association or by the board. Candidates declared eligible after July 1, 1952, who do not take a clinical internship, may, after four years of training as outlined in C-2-c-(1)-(*a*) and (*b*), spend the fifth year in independent practice in an institution or laboratory acceptable to the board.

Note.—As outlined in the preceding paragraphs, the total time requirements of the board are unchanged after July 1, 1952, namely, five years of study or practice after graduation from medical school (with exceptions noted in sections C-2-a-(1) and C-2-b-(1).

3. The specific requirements for those acceptable after eleven years are as follows:

a. The practice of pathology under circumstances acceptable to the board for a period of not less than eleven years. At the election of the candidates, not to exceed one year of straight or rotating clinical internship may be substituted for one of the eleven years. For those candidates in this category who have had some special study and training in pathologic anatomy or clinical pathology acceptable under paragraphs C-2-a, b or c, double time credit will be allowed. Thus, if a person has two years of acceptable supervised study and training, only seven years of practice are required.

D. Special Qualifications

1. Prior to Dec. 31, 1947, the board at its discretion certified candidates without examination, if the following conditions were met as of July 1, 1939:

a. That the candidate has been for a period of five years of professional rank in a department of pathology in an approved medical school; or

b. That the candidate had been practicing pathology for ten years in a senior position in a hospital having an adequate department of pathology, and approved by the Council on Medical Education and Hospitals of the American Medical Association or in an institution acceptable to the board.

Credit for Military Service

Credit may be allowed for training and experience in pathology in the federal services during the period July 1, 1940 to June 30, 1947. This credit for training or experience or both is given on an individual basis and will depend upon the opportunity the applicant has had as indicated by his or her medical service record in the specialty of pathology.

After July 1, 1947, credit for those military services will be given on the same basis as it is in civilian institutions, except that the rule in the preceding paragraph will not apply to reserve officers who continue on active duty or are called to active duty after that date.

Subspecialties of Pathology
(In Force After July 1, 1948)

Candidates who have met all general requirements and who have successfully passed the examination in pathologic anatomy and clinical pathology may apply for special designation of a subspecialty of pathologic anatomy or clinical pathology. The board, at its discretion, may approve this application and, after the candidate has successfully passed a prescribed examination, will issue a certificate reading "Pathologic Anatomy (Neuropathology)," "Clinical Pathology (Clinical Bacteriology)," etc.

Candidates who have met all general requirements and who have had five years' special training and experience in a special field of pathology which is acceptable to the board may apply to the board for certification in this special field. The board, at its discretion, may approve this application, and after the candidate has successfully passed a prescribed examination, will issue a certificate reading "Neuropathology," "Clinical Bacteriology," etc.

Application Blank and Fee

Application must be made on the special form which may be procured from the secretary and forwarded with other required credentials and the application fee. Applications cannot be given consideration by the board unless accompanied by the application fee.

The application or examination fee for candidates is $35. If the candidate fails in his examination he will be admitted to a second examination after one year, but not later than three years, without additional fee. After two reexaminations, the applicant must file a new application and pay an additional fee before a fourth examination will be given.

The application fee of $35 has been arrived at after careful consideration and is based on actual estimates of the expenses of examination and administration. None of the board members receive any compensation for their services except actual expenses incurred.

If the applicant, for any reason, is deemed ineligible for examination by the Board, his fee will be returned; however, the application fee is not returnable after the candidate has officially been accepted for examination and notified to report for the same.

Examinations

Written and oral examinations will be held at or near the time and place of national medical meetings at the discretion of the board. If a number of applications from any region of the country are received, an examination in conjunction with a national medical meeting in that section will be arranged so that the financial outlay of the applicant in meeting the examiners will be as small as possible.

The examinations are to be based on the broad principles of pathology with emphasis on diagnosis, interpretation and technic. The applicant may apply for certification in either pathologic anatomy or clinical pathology or both.

The examinations in pathologic anatomy consist of a written test, an oral examination on gross pathology and a

practical examination in microscopic pathology. The examination in clinical pathology consists of a written test and an oral and practical examination in the six phases of clinical pathology: bacteriology, hematology, clinical chemistry, parasitology, serology and clinical microscopy.

DEFINITIONS

1. Pathologic anatomy is that branch of pathology which deals with the morphologic aspects of disease, recognition being given that that definition covers two phases of pathology.

(*a*) The applied phase with special attention to the description and diagnosis of gross and microscopic specimens.

(*b*) The academic phases of teaching and general morphologic diagnosis.

2. Clinical pathology is that branch of pathology which deals with bacteriology, immunology, clinical chemistry, parasitology, hematology, endocrinology and clinical microscopy, the application of the physical and biologic sciences to the diagnosis, prognosis and treatment of disease.

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APPLICANTS FOR CERTIFICATES

Requirements for Applicants.—All candidates for examination for certification must meet the following requirements:

1. Graduate from a Class A medical school.
2. One year's intern service in a recognized hospital.
3. Two years service in an approved pediatric center.

On May 1, 1946, it was ruled that at least one year of the two years' service in the pediatric center must be in a full time pediatric internship or residency in a recognized institution. Because of the shortage of residencies, the board at this time voted that temporarily the second year of required residency training might be met in various ways.

(*a*) A full time academic postgraduate course of nine months in an approved pediatric center is credited for one year's work.

(*b*) Shorter postgraduate courses of three to four months duration must add up to a full time year.

(*c*) A maximum of three months' credit each is allowed for full time residency type training in allied pediatric subjects, such as pediatric allergy, pediatric psychiatry, pediatric pathology, pediatric cardiology.

(*d*) A maximum of six months' credit is allowed for residency training in an approved contagious disease hospital.

4. An additional term of two years of specialized study and/or practice. Credit of one year toward this requirement is allowed for military service.

5. Preceptorships are not accepted for credit toward the residency requirement, but are accepted toward the practice requirement.

The board defines service in a pediatric center as full time devoted to rounded experience in an approved hospital which includes ward and outpatient service and both therapeutic and preventive pediatrics. It is expected also, that the service will include adequate graduate training in the basic medical sciences, as well as in the clinical laboratory and public health aspects of the specialty. The time served in pediatric centers need not be continuous or spent in the same institution. The list of hospitals approved for pediatric residency training is published each year in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION (volume 137, pages 69-71 [May 1] 1948). It should be noted that some hospitals are approved for only one year of pediatric training. Careful perusal of the footnotes to the above list will indicate these hospitals. Training credit of only one year can be allowed for service in the hospitals indicated, regardless of its actual duration.

The application fee is $125 and must be remitted with the application. Refund will be made only if the applicant is refused an examination. Applicants who failed in an examination may apply for a second examination after two years have elapsed and the candidates have presented evidence of continued study and activity in pediatrics. The fee for a second examination is $75.

Application must be made on special blanks which may be secured from the executive secretary. These must be sent in to the executive secretary at least four months, and preferably six months, before the date on which the candidate would like to be examined. Formal applications will not be accepted until the last year of the final phase of training. Earlier filing of a preliminary information form is encouraged.

Letters from two competent pediatricians recommending each applicant must be sent to the executive secretary of the board. These letters should not accompany the application, but should be sent directly to the executive secretary. No member of the board, or official examiner, may recommend any applicant.

A list of papers or books published must be sent in with the application blanks.

EXAMINATIONS

Examinations will be held at or near the time and place of meetings of the American Academy of Pediatrics, or at other times and places at the discretion of the board, depending on the number of applicants from any region of the country. It is proposed to arrange examinations in different cities so that as little financial burden as possible will be placed on the applicants in meeting the examiners.

The purpose of these examinations is to determine the applicant's competency to practice pediatrics. This board feels that the best impression of an applicant's ability can be obtained by oral examination, although written ones may be submitted at times. However, at the present time this board is also giving a written examination at least six weeks preceding the oral examination. It is not proposed at the present time to require the applicant to send in case reports. The board feels that growth and development are fundamental parts of pediatric training.

INFORMATION ON CERTIFICATION IN ALLERGY
BY
THE AMERICAN BOARD OF PEDIATRICS

The American Board of Pediatrics, Inc., has taken final action, establishing certification in allergy as a subspecialty of pediatrics.

Certification in pediatrics by the American Board of Pediatrics is a prerequisite for such certification in allergy. Those who are already diplomates of the pediatric board and who wish to be certified in allergy must make formal application to the secretary of the American Board of Pediatrics. Those who are not yet certified in pediatrics and who desire certification in allergy as well should indicate this in their application to the board of pediatrics as examination in both subjects may be held at the same time.

The application fee for certification in allergy will be $25 in addition to the application fee for pediatric certification.

An Advisory Committee of Allergy has been appointed to act with the Board of Pediatrics in all matters pertaining to the selection and examination of applicants for subspecialty certification. This committee is identical with the Advisory Committee on Allergy of the American Board of Internal Medicine.

The Advisory Committee on Allergy has outlined the requirements for applicants who desire examinations in the subspecialty of allergy as follows:

1. Two years, full time, in a satisfactory allergy clinic and its hospital (including training, in both allergy and pediatrics), or

2. One year, full time, in the allergy clinic and its hospital, and two additional years of full attendance on such an allergy clinic and its activities, or

3. Five years, full attendance, on such an allergy clinic and its activities, or

4. Special training under qualified preceptors, solely or in combination with aforementioned types of training, and such other training as might be felt adequate to prepare an individual for the practice of allergy.

It is further the opinion of the committee that clinics for such training should fulfil the following qualifications:

1. They should be in hospitals that have been accepted by the Council on Medical Education and Hospitals of the American Medical Association and by the American Board of Pediatrics for training and certification in pediatrics and for residencies in pediatrics or medicine.

2. The director of the Allergy Clinic shall be a diplomate certified in allergy by the American Board of Internal Medicine, or the American Board of Pediatrics.

When accepted the diplomate will receive from the American Board of Pediatrics a certificate in allergy and will be listed as a specialist in allergy.

Prospective applicants for certification in the subspecialty of allergy may apply to the secretary of the American Board of Pediatrics.

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QUALIFICATIONS FOR ELIGIBILITY TO CERTIFICATION

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

GENERAL QUALIFICATIONS

1. General

A. Satisfactory moral and ethical standing in the profession.

B. Membership in the American Medical Association or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. (Exceptions to the foregoing qualifications shall be made by the American Board of Physical Medicine for good and sufficient reasons.)

PROFESSIONAL QUALIFICATIONS

2. Professional

A. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association.

B. Completion of an internship, preferably of the general rotating type, of not less than one year in a hospital approved by the same council.

SPECIAL TRAINING

A. A period of study after the internship of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the same council and by the American Board of Physical Medicine as competent to provide a satisfactory training in physical medicine.

B. This period of specialized preparation shall include: (*a*) graduate training in anatomy (including kinesiology and functional anatomy), physics (including radiation physics, electronics and medical instrumentation), physiology, pathology and other basic sciences which are necessary to the proper understanding of physical medicine; (*b*) an active experience of not less than two years in hospitals, clinics, dispensaries and diagnostic laboratories recognized by the Council and the American Board of Physical Medicine; (*c*) the written and oral examinations, given by the American Board of Physical Medicine, shall include questions concerning the basic sciences, clinical practice and laboratory and public health problems as related to physical medicine.

C. An additional period of not less than two years of study and/or practice in physical medicine.

METHOD OF EXAMINATION

Physical medicine includes the diagnosis and treatment of disease by means of physical agents. These physical agents include heat, water, electricity, ultraviolet and infra-red radiation and mechanical devices and agents (such as massage and therapeutic exercise).

Physical medicine has been termed medical applied biophysics. As now practiced, the special field of physical medicine includes (1) the employment of physical agents in diagnosis (as in electrical tests for reaction of degeneration or in the cold pressor test), (2) the employment of physical agents in treatment, (3) occupational therapy and (4) the physical rehabilitation of convalescent and disabled patients.

The physician who specializes in physical medicine must have a thorough knowledge of the basic sciences as related to these subjects as well as clinical practice in the various phases of physical medicine.

Written and oral examinations will be given which will assure the board that the applicant is thoroughly grounded in:

A. The basic sciences including:

(*a*) Anatomy (including kinesiology and functional anatomy). Because of the importance of proper knowledge of the function of muscles in conjunction with the administration of therapeutic exercise and physical reconditioning of convalescent and disabled patients, the applicant will be carefully examined concerning his knowledge in this field.

(*b*) Physics (including radiation physics, electronics and instrumentation). Because physical medicine deals largely with the employment of physical agents, in diagnosis and treatment, the applicant will be expected to be well informed concerning the fundamentals of medical physics. He will be expected to be familiar with such subjects as the physics of heat, ultraviolet and infra-red radiation, and electricity (including the physics of low voltage currents and high frequency currents as employed in medicine). Because of the newer developments in medical electronics and medical instrumentation, the applicant will be examined concerning these subjects.

(*c*) Physiology. The applicant will need to know the fundamentals of physiology, especially the physiology of movement and the physiologic effects of the various physical agents employed in medicine.

(*d*) Pathology. A basic knowledge of pathology as related to physical medicine will be required and questions dealing with this subject will be included in the examination.

(*e*) Other fundamental sciences. The applicant will be examined concerning his knowledge of such subjects as biochemistry and bacteriology as related to physical medicine.

B. The clinical aspects of physical medicine including:

(*a*) Thermotherapy. The various clinical applications of heat and cold both locally and generally should be thoroughly familiar to the applicant.

(*b*) Hydrotherapy. The methods of employing hydrotherapeutic devices and procedures will be covered in the examination.

(*c*) Electrotherapy. Questions concerning clinical, diagnostic and therapeutic uses of the constant current, interrupted currents, sinusoidal and high frequency currents will be included in the examination.

(*d*) Radiation therapy. The applicant will be examined especially concerning the diagnostic and therapeutic uses of ultraviolet and infra-red radiation. (Applicants will not be required

to answer questions concerning the therapeutic applications of roentgen rays and radium which are not included in the field of physical medicine but in the field of radiology.)

(*e*) Kinesitherapy. Questions concerning the clinical uses of therapeutic exercise and massage will be included in the examination.

(*f*) Occupational therapy. The applicant will be expected to answer questions concerning the indications for, and clinical applications of, various types of occupational therapy.

(*g*) Physical rehabilitation. Because of the importance of the understanding of the philosophy of convalescent reconditioning and rehabilitation of the seriously disabled person, the applicant will be expected to have a thorough knowledge of the modern developments in these phases of physical medicine.

APPLICATION

The application form shall contain a record of the candidate's premedical and medical training as well as of internships, graduate study, hospital and dispensary staff appointments, teaching positions, membership in medical societies, medical papers published, and the names of three well known physicians to whom the board may write for professional and character references.

The application shall also be accompanied by one recent, signed photograph of the candidate mounted on the application and the registration and examination fee of twenty-five dollars which fee will cover both the written and oral examinations. (In case of rejection of application, this fee will be refunded with the exception of ten dollars, which will be considered as a registration fee). An additional fee of fifty dollars will be required when the certificate is issued.

AMERICAN BOARD OF PLASTIC SURGERY

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WALLACE H. STEFFENSEN, Grand Rapids, Mich.

GENERAL ELIGIBILITY REQUIREMENTS

1. Moral and ethical standing in the profession satisfactory to the board. The board, believing that the practice of "fee splitting" is pernicious, leading as it does to a traffic in human life, will reserve the right to inquire particularly into any candidate's practice in regard to this question.

2. Membership in the American Medical Association, or, by courtesy, membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association.

3. Those whose activities are limited to the practice of plastic surgery.

4. This board will accept as applicants for examination only those who are full citizens of the United States or Canada. Notarized statements, not original citizenship papers, attesting to the fact of full citizenship in the United States or Canada must be furnished by foreign born applicants when the application is filed. Such candidates must have at least two years of practice in plastic surgery in North America after completing the training required by the board.

PROFESSIONAL REQUIREMENTS FOR QUALIFICATION

1. Graduation from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association, or graduation from a foreign school considered acceptable by this board.

2. Completion of an internship of not less than one year in a hospital approved by the same Council, or what would constitute in the opinion of the board the equivalent of such training.

3. Graduate study in general surgery for a period of not less than two years beyond the intern year, to be taken in an approved graduate school or hospital.

4. Graduate study in plastic surgery in an approved residency or preceptorship for an additional period of not less than two years, to be taken in an approved graduate school or hospital, or under auspices satisfactory to this board.

5. An additional period of not less than two years of practice in plastic surgery.

The above training may be taken in a recognized graduate school of medicine, or a resident in surgery and in plastic surgery in an acceptable hospital,[1] or under a sponsorship accredited by the American Board of Plastic Surgery for such training. By the latter statement it is meant that one may secure the necessary and specified training as an assistant to an accredited surgeon, provided suitable facilities for the education of the candidate are offered.

The period of special training should emphasize the relation of the basic sciences—anatomy, pathology, physiology, biochemistry and bacteriology—to the application of surgical principles which are fundamental in all branches of surgery. In addition, the candidate must understand and be trained in the following subjects: viz., the care of emergencies, shock, hemorrhage, blood replacement, electrolyte and fluid balance, protein and nitrogen balance, choice of anesthetics, chemotherapy, acidosis and alkalosis, narcotics and hypnotics, wound healing, etc.

Because of vagaries of training, such as changes from one specialty to another, interims of military duty and other service to the country, the aptitude and skill of candidates, the board may, at its discretion, review and make recommendations for or against certification of certain applicants outside of the listed qualifications and requirements.

The board reserves the privilege of requesting lists of operations done solely by the candidate for one or more years, or of requesting special and extra examinations, written, oral or practical, and of requesting any specific data concerning the candidate that may be deemed advisable before making final decision for certification.

Eligibility rulings or an evaluation of a candidate's qualifications cannot be made by the secretary or by any one member of the board. These are made only by the entire board upon recommendation of the Committee on Credentials and Requirements after a review of the candidate's formal application for such rulings.

MILITARY CREDIT

Credit for military service is given on an individual basis, each case being considered on its own merits and the amount of credit given being determined by the board when the information is submitted with the application.

CASE REPORTS

Candidates whose general eligibility and professional requirements are found satisfactory shall be required to submit twenty-five diversified case reports, together with photographs, to the secretary of the board. This group of case reports must include a variety of material from the entire body rather than a number of cases of one type, and should carry the candidate's personal deductions, conclusions and comments and should be sufficiently detailed to show if the conclusions drawn indicate a grasp of the subject and if the results justify the procedure.

1. An acceptable residency is one which has been approved by the Council on Medical Education and Hospitals of the American Medical Association jointly with this Board.

Each case report should be typewritten on paper approximately 8½ by 11 inches, separately numbered and paged, with the candidate's name on each page. Each report should be individually assembled and held by removable fasteners and should have a cover sheet with the candidate's name, the number of the case, hospital number, diagnosis and a brief summary of the case (not over 100 lines). The case reports, photographs and other data are to be filed with the permanent records of the board. Cases should be chosen from the private practice of the candidate or from the hospital or clinic service. Identification numbers of cases presented are required. The initials, color, age and occupation of each patient should be stated as should the name of the hospital where treated and dates of admission, operation and discharge. The important details of family history, if relevant, and of the previous history should be given. The history of the condition for which the candidate was consulted should be stated clearly and concisely, indicating previous treatment, if any, and the mental, social or economic factors involved. The physical examination of the patient with special reference to the existing deformities should be carefully described. All laboratory and other special examinations, such as roentgenograms, which were made, should be reported, with a statement of what was determined by them. The indications for operation and for the type of operation employed should be given; the preliminary treatment and the type of anesthesia used should be stated. A full description of the operative technic with methods of hemostasis, suture and drainage, if any, and the name of the assistant should be given. The early and late postoperative course and results should be described.

Photographs of conditions and drawings of operative technic, illustrative of each case, should be included and securely attached to each case report, with the name of the candidate and the number of the case indicated. All photographs should be made by a sharp focus lens from untouched negatives with identical lighting conditions, exposure and developing, and should show conditions before and after operations with clear detail.

If the case reports (and lists of operations when requested) are approved, the candidate will receive subsequent information regarding taking the examinations.

The board at its discretion may request certification of case reports by the hospital where the operations were performed. The following form should accompany the case reports: "I hereby certify that the planning and essential surgical procedures described herein were carried out by me as an independent operator."

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his ability.

EXAMINATIONS

The qualifying examinations will be divided into Part I, Written, and Part II, Oral and Practical (and written if deemed necessary).

Part I shall consist of a written examination prepared by the Examination Committee upon questions which concern the fundamental surgical principles as applied to plastic surgery. It shall be given under the supervision of a diplomate of one of the surgical specialty boards, preferably of the American Board of Plastic Surgery. The questions shall be given under the following headings: (1) theory and practice of plastic surgery; (2) applied anatomy, applied physiology; (3) pathology, bacteriology, clinical laboratory methods (pharmacology); (4) local and general anesthesia, shock and hemorrhage; (5) handling of tissues, wound healing, surgical accidents. To be considered as passing, the candidate shall be required to receive a grade of 65 per cent in each portion of the written examination and an average grade of 75 per cent on the entire written examination.

Part II: In order to be eligible for Part II of the examination, a candidate must have fulfilled the board's requirements as to preliminary training in and practice of plastic surgery, and must have successfully passed (*a*) the Part I, written, examination of the Board or (*b*) have been certified by the American Board of Surgery with two to four extra years of accredited training in plastic surgery.

Part II shall, as far as possible, be of a practical nature, and shall be conducted in the candidate's locality by no fewer than two competent examiners selected by the board.

The clinical examination shall include any or all of the following: (1) the exhibition of patients who have undergone or who are undergoing treatment by the candidate; (2) examination, diagnosis and presentation of a plan of correction by the candidate of cases provided by the examiners; (3) oral examination of the candidate and observations made in the operating room, treatment rooms, and wards; (4) a written examination concerning plastic surgery may be given to correlate the clinical evaluation.

For those certified by the American Board of Surgery and excused from taking Part I of the examination in lieu of this certification, an oral or written examination on fundamental surgical principles as applied to plastic surgery will be given in the Part II examination.

REEXAMINATIONS

Candidates who have failed in the Part I or Part II examination may be admitted to another examination after one, two or three years have elapsed, except in such case as the board may for good and sufficient reason deny a candidate the privilege of reexamination. The candidate must give sixty days' notice requesting reexamination and pay a fee of $25 for each reexamination in Part I and $50 for each reexamination in Part II. The examiners conducting the first examination of a candidate will not be eligible to conduct the reexamination.

FEES

The fee for application and examination is $100; of this sum, $25 must accompany the application. The remaining $75 must be paid when the candidate is notified of acceptance for examination. There will be no refunds. This fee may be increased at the discretion of the board.

The Board is a nonprofit organization. The fees of candidates are used solely for defraying the actual expenses of the board.

Because of the limited number of surgeons certified by this board it is necessary for a while to request $10 annually from diplomates, after the first year's certification, to defray expenses of the board.

CERTIFICATION

It is the board's prerogative to determine the fitness professionally and ethically of any candidate for its certificate, and the action or decision of the American Board of Plastic Surgery regarding the certification of any candidate shall be final.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY

JOHN C. WHITEHORN, President, Baltimore.
H. HOUSTON MERRITT, Vice President, New York.
FRANCIS J. BRACELAND, Secretary-Treasurer, 102-110 Second Avenue, S. W., Rochester, Minn.
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PERCIVAL BAILEY, Chicago.
WALTER FREEMAN, Washington, D. C.
LOUIS J. KARNOSH, Cleveland.
ROLAND MACKAY, Chicago.
GEORGE H. STEVENSON, London, Ontario.
A. R. VONDERAHE, Cincinnati.

APPLICATION FOR CERTIFICATES

An application, in order to be considered at any meeting of the board, must be in the hands of the secretary of the board not less than ninety days before the date of such meeting. A

proper application form may be obtained from the secretary. Application may be made for certification in psychiatry or in neurology or in both fields. Applications will be formally considered only when made on the official application blank in such form as may be adopted from time to time by the board and when accompanied by an application fee in such amount as may be fixed by the board.

The secretary of the board on receipt of an application shall forthwith make inquiries from those to whom the candidate refers and from such other persons as the secretary may deem desirable and shall verify the candidate's record from the biographical records of the American Medical Association, after which he shall forward the application to the Committee on Credentials. This committee shall consider the application and other information available and notify the secretary whether the application is accepted. The certification of a candidate in either psychiatry or neurology, or both, shall be approved by a majority of the members of the entire board at a meeting held for such certification.

FORM OF CERTIFICATION

There shall be separate certification in psychiatry and in neurology and two certifications or a combined certification for those qualified in both fields. The certifications shall be in such form as is approved by the Board of Directors.

GENERAL REQUIREMENTS FOR APPLICANTS

Each applicant for a certificate must establish that—

(*a*) He is a physician duly licensed by law to practice medicine.

(*b*) He is of high ethical and professional standing.

(*c*) He is now a member of the American Medical Association, or a member of such medical societies as are recognized for purposes of certification by the Council on Medical Education and Hospitals of the American Medical Association. Exceptions to the foregoing may be made at the discretion of the board for good and sufficient reasons.

(*d*) He has received adequate training in psychiatry or neurology, or both, as a specialty.

CLASSES OF APPLICANTS

Class A.—Applicants who graduated from medical school before the foundation of the board (1934) will not be held to the strict interpretation of the published requirements in formal graduate training. Under such circumstances the board will consider the training and experience of the applicant and decide whether or not he will be admitted to the examination.

Class B.—Candidates graduated from a medical school after 1934 shall fulfil the following requirements.

PROFESSIONAL EDUCATION

1. Graduation from a medical school in the United States or Canada approved by the Council on Medical Education and Hospitals of the American Medical Association. In the case of an applicant whose training has been received outside the United States and Canada, his credentials must be satisfactory to the aforementioned Council and the Advisory Board for medical specialties.

2. Completion of a year's internship approved by the same Council in general medicine, general surgery, pediatrics or a rotating internship.

3. The nine months' wartime internships, assistant residencies or residencies will be accepted as an equivalent of one year.

SPECIAL TRAINING

(These requirements will be rigidly enforced after Jan. 1, 1948).

Admission to the examination for certification in psychiatry or neurology requires a total experience of not less than five years.

There shall be a period of three years of full time study in institutions recognized by the Council on Medical Education and Hospitals of the American Medical Association, and approved by this board as competent to provide training in psychiatry or neurology. A candidate may submit to the board evidence of special training in psychiatry or neurology not covered in these specifications for its evaluation and approval.

In addition to these three years of training under supervision, each candidate should have two years of clinical practice with major responsibility for the care of patients.

This training for psychiatrists should include clinical work with psychoneurotic and psychotic patients, combined with the study of basic psychiatric sciences, medical and social psychology, psychopathology, psychotherapy and the physiological therapies, including a basic knowledge of the form, function and pertinent pathology of the nervous system. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training period should include instruction in the psychiatric aspects of general medical and surgical conditions and the behavior disorders of children and adolescents sufficient to develop practical ability to direct the treatment of such conditions. It should also include collaborative work with social workers, clinical psychologists, courts and other social agencies. The training program of the candidate for certification in psychiatry should include sufficient training in neurology to recognize and to evaluate the evidences of organic neurological disease.

The training for neurologists should be based on clinical work with adults and children with neurological disorders, including the neurological complications of medical and surgical conditions. This shall be combined with study of basic neurological sciences, neuroanatomy, neurophysiology, neuropathology and neuroroentgenology. This training should be supervised and guided by teachers competent to develop skill and understanding in the utilization of such basic knowledge in dealing with patients. Mere factual knowledge is not sufficient. This training should include sufficient psychiatry to enable the candidate to recognize and evaluate the common psychiatric reactions.

Candidates seeking certification in both neurology and psychiatry or supplementary certification in one after being certified in the other, must submit evidence satisfactory to the board of an additional two years of full time basic training in the supplementary specialty.

Thus, no candidate is eligible for examination by the board until he has completed at least five years of special training and experience in neurology or psychiatry for a single certificate, or at least seven years of training and experience for certification in both neurology and psychiatry.

TRAINING IN THE ARMED FORCES

Credit will be granted for one year of wartime service in the Army, Navy, Public Health Service and Veterans Administration. Further credit for basic training will be granted only if the training has been received in an institution recognized by the Council on Medical Education and Hospitals of the American Medical Association and approved by this board. Time beyond one year spent in the above Government agencies may be credited to experience, providing the candidate has been regularly assigned to a service in neurology or psychiatry.

EXAMINATIONS

Date and places of examinations are set by the board at its discretion and are announced in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, in the *American Journal of Psychiatry*, in the *Journal of Nervous and Mental Diseases*, and in the *Archives of Neurology and Psychiatry*.

The examinations are designed to test the competence of the candidates. There will be separate examinations for certification in psychiatry and in neurology. The board requires some proficiency in neurology on the part of those it certifies in psychiatry and vice versa, but examines the candidate in accordance with the certificate he seeks. The examinations will be of such type that no adequately trained individual will

fail; yet they will be sufficiently searching so that the specialist in fact may be separated from the specialist in name. The practical examination will include the examination of patients under the supervision of the examiner. The manner of examining patients, and the reasoning and deductions therefrom, will constitute an important part of the examination. Oral and practical examinations will be given in the basic sciences with special regard to their clinical implications.

PAYMENT OF FEES

The candidate upon filing his application shall accompany it with an application fee of $25 which is not returnable. When notified by the secretary that he is eligible for examination, he shall send the secretary an examination fee of $25 for examination in either psychiatry or neurology. There will be separate examinations in psychiatry and in neurology. Should the applicant desire examination in both at one meeting of the board, he shall send an examination fee of $50. A candidate who has failed in one examination is eligible for reexamination within three years upon payment of a reexamination fee of $25. A candidate who has been conditioned in one examination is eligible for reexamination within three years upon payment of a reexamination fee of $10. A candidate who has been certified in either psychiatry or neurology, and who has been admitted to the supplementary examination for the other certificate, shall pay an additional examination fee of $25. The candidate who has failed twice, or one who does not apply for reexamination within three years, will be considered a new applicant.

AMERICAN BOARD OF RADIOLOGY

E. L. JENKINSON, President, Chicago.
I. H. LOCKWOOD, Vice President, Kansas City, Mo.
B. R. KIRKLIN, Secretary-Treasurer, 102-110 Second Avenue, S.W., Rochester, Minn.
RAY A. CARTER, Los Angeles.
D. S. CHILDS, Syracuse, N. Y.
L. H. GARLAND, San Francisco.
ROSS GOLDEN, New York.
H. DABNEY KERR, Iowa City.
L. C. KINNEY, San Diego, Calif.
F. W. O'BRIEN, Boston.
J. W. PIERSON, Baltimore.
U. V. PORTMANN, Cleveland.
DOUGLAS QUICK, New York.
LEO G. RIGLER, Minneapolis.
B. P. WIDMANN, Philadelphia.

CERTIFICATES

A certificate will be issued to each candidate who meets the requirements of the board, to the effect that the holder of the certificate has had adequate training in radiology and has successfully fulfilled the requirements of the board.

A certificate granted by this board does not of itself confer, or purport to confer, any degree, or legal qualifications, privileges or license to practice radiology. Certificates of the board shall be issued upon one of two forms:

1. A certificate to the effect that the applicant has been found qualified to practice radiology in all its branches.

2. A certificate to the effect that the applicant has been found qualified to practice radiology in one or more of the following special fields: (*a*) roentgenology; (*b*) diagnostic roentgenology; (*c*) therapeutic radiology.

DEFINITIONS

For the purposes of this Board, the following definitions are adopted:

1. Radiology is that branch of medicine which deals with the diagnostic and therapeutic application of radiant energy including roentgen rays and radium.

2. Roentgenology is that branch of radiology which deals with diagnostic and therapeutic application of roentgen rays.

3. Diagnostic roentgenology is that branch of radiology which deals with the diagnostic application of roentgen rays.

4. Therapeutic radiology is that branch of radiology which deals with the therapeutic application of roentgen rays and radium.

GENERAL REQUIREMENTS

Each applicant for admission to the examination shall be required to present evidence that he has met the following standards:

A. GENERAL QUALIFICATIONS

1. Satisfactory moral and ethical standing in the profession.

2. A license to practice medicine in the state or county in which he resides.

3. Membership in the American Medical Association, or membership in such Canadian or other medical societies as are recognized for this purpose by the Council on Medical Education and Hospitals of the American Medical Association. Except as herein provided, membership in other societies shall not be required.

4. That the applicant holds himself out to be a specialist in radiology or one of its branches as defined under "definitions," and that he devotes his time primarily and principally (at least 75 per cent) to the practice of radiology or one of its branches.

5. That he is a citizen of the United States or Canada. Candidates from other countries must be permanent residents of that country and native citizens thereof.

B. GENERAL PROFESSIONAL EDUCATION

1. Graduation from a medical school recognized by the Council on Medical Education and Hospitals of the American Medical Association. If the applicant is a resident of the United States or one of its possessions and is a graduate of a medical school outside the United States or Canada, he must have a certificate of the National Board of Medical Examiners.

2. Completion of an internship of not less than one year in a hospital approved by the same Council.

C. SPECIAL TRAINING

(Applicable to candidates who begin their training on or after Jan. 1, 1942, and to all candidates examined after Jan. 1, 1945.)

1. After completion of the internship there shall be a period of special training in Radiology of not less than three years in clinics, hospitals or dispensaries recognized and approved by The American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in radiology. This period of specialized training shall include:

(*a*) Graduate training in pathology, radiation physics and radiobiology. A period of six months full time training in pathologic anatomy is recommended but, where this is not possible to arrange, the student during his three year training period may, by attending pathologic conferences, postmortem examinations and studying removed tissues, receive adequate training in pathology. It is recommended that radiation physics be taught by a combination of didactic lectures, practical examples and direct clinical demonstrations.

(*b*) An active experience (residency) of not less than twenty-four months in an institution, the radiologic department of which is recognized and approved by The American Board of Radiology and the Council on Medical Education and Hospitals of the American Medical Association as capable of providing satisfactory training.

(*c*) Examination in the basic sciences of radiology as well as the clinical aspects thereof. These examinations should be given by the student's instructors in order to allow those responsible for his training to certify to the board that he is adequately prepared.

In the current emergency the Board will allow one year of military service spent in a radiology department in the

United States Army, Navy or Marine Corps to be applied toward the satisfaction of one year of graduate training.

At its annual meeting in Chicago in June 1948 the board decided to grant credit for preceptor type training provided the candidate first spends two years in an approved x-ray department on a formal residency basis. Then the board will give credit for two years' preceptorship in lieu of the third year of residency training provided the preceptor is acceptable to the board. This program is now in effect.

APPLICATIONS

The board desires to appraise the candidate's educational opportunities (premedical, medical and radiologic), the ability of his instructors, his hospital and teaching positions, his original investigations, his contributions to radiologic literature, his membership in medical societies and his local and general reputation.

For this purpose, application must be made on a special blank which may be obtained from the secretary. No application will be considered unless made on the regular application blank. This application shall be forwarded with the required data, two unmounted photographs and the fee of $50 at least two months before the date of the examination.

FEE

A fee of $50 must accompany each application blank. This fee will not be returned, and no application will be considered until the fee is received. This fee has been carefully computed and is used entirely for administrative purposes. Members of the board and special examiners do not receive any compensation except for actual expenses connected with holding the examinations. As the number of candidates decreases, it may become necessary to raise the fee.

EXAMINATIONS

Each year the board will hold an examination in conjunction with the annual meeting of the American Medical Association, and, when sufficient applications are on file, a second examination will be held in conjunction with the annual meeting of the American Roentgen Ray Society and/or the Radiological Society of North America.

For the present, examinations consist of practical and oral examinations, although written examinations may be added later. The examinations are designed to test the candidate's fitness to practice radiology or one of its branches as a specialty. The board will endeavor to adapt this examination to the candidate's experience and years of practice. It will try especially to ascertain the breadth of his clinical experience, his knowledge of the basic sciences of radiology, and likewise his knowledge of the recent literature on radiology, and his general qualifications as a specialist in this branch of medicine.

The examination consists of tests in film interpretation and an oral examination in pathology, physiology, radiophysics and radiobiology, as well as the clinical applications of roentgen rays and radium. The applicant is also examined in "professional adaptability," in an attempt to ascertain his attitude toward his fellow practitioners and his patients.

Whenever an applicant fails to pass the examination, the board, if requested, will make suggestions as to suitable courses of instruction for the purpose of overcoming his deficiencies.

REEXAMINATIONS

If the candidate fails in the first examination he will be admitted to a second examination after one year has elapsed but not more than three years. He must give sixty days' notice of his intention to appear for reexamination, and pay an additional fee of $25. If a candidate who has failed does not appear for reexamination before the expiration of three years, he will be required to make a new application and pay an additional fee of $50.

A candidate having failed twice may, after one year has elapsed, file a new application which must be accompanied by the fee of $50.

AMERICAN BOARD OF SURGERY

FORDYCE B. ST. JOHN, Chairman, New York.
SAMUEL C. HARVEY, Vice Chairman, New Haven.
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ROBERT M. MOORE, Galveston, Texas.
FREDERICK L. REICHERT, San Francisco.
CALVIN M. SMYTH JR., Philadelphia.
NATHAN WOMACK, St. Louis.

The American Board of Surgery has recorded and clarified its requirements for eligibility for examination. The requirements have been modified for those who will begin their surgical training July 1, 1950, after one year's internship. For those whose surgical training, after one year's internship, has begun or will begin prior to July 1, 1950, the requirements are unchanged. A new booklet of information will be issued by the board early in the Fall. Full information may be obtained by writing to the board's office: Dr. J. Stewart Rodman, Secretary, 225 S. 15th Street, Philadelphia 2, Pa.

AMERICAN BOARD OF UROLOGY

GILBERT J. THOMAS, President, Beverly Hills, Calif.
CLARENCE G. BANDLER, Vice-President, New York.
HARRY CULVER, Secretary-Treasurer, Route 13, Sunnyside Road, Minneapolis 13.
GEORGE GILBERT SMITH, Brookline, Mass.
GEORGE F. CAHILL, New York.
EDGAR BURNS, New Orleans.
CHARLES C. HIGGINS, Cleveland.
A. I. DODSON, Richmond, Va.
GRAYSON CARROLL, St. Louis.

APPLICATION BLANK; REQUIREMENTS FOR ALL APPLICANTS

Application for certification must be made on a special form. This will be provided by the secretary and must be returned to him accompanied by other required data and credentials, and by $35 of the examination fee.

Requirements for Applicants (Section 2, of the By-Laws of the American Board of Urology, Inc.).—Each applicant, before he shall become eligible to take the examination for certification in urology, must:

A. Have graduated from a medical school of the United States or Canada recognized by the Council on Medical Education and Hospitals of the American Medical Association and must have completed an internship of not less than one year in a hospital approved by the same council. (The former requirement is not applicable to a candidate who graduated from an institution now extinct or whose graduation occurred before the American Medical Association had prepared a list of accredited medical schools.) All graduates of foreign medical schools must obtain a license in the state in which they propose to practice medicine and the certificate of the National Board of Medical Examiners before making application for certification.

B. Establish in a manner satisfactory to this board that he is a physician duly licensed by law to practice medicine, that he is of high ethical and professional standing and that he has received adequate special training in urology.

The board is attempting to increase and to standardize the facilities for urological training in teaching institutions, so that the expression "special training in urology" may be interpreted to include:

1. A period of study, after the internship, of not less than three years in clinics, dispensaries, hospitals or laboratories recognized by the Council on Medical Education and Hospitals

of the American Medical Association as competent to provide a satisfactory training in the special field of urology.

This period of specialized preparation should include: (*a*) graduate training in anatomy, physiology, pathology and the other basic medical sciences which are necessary to the proper understanding of the disorders and treatment involved in the specialty of urology; (*b*) an active experience of not less than eighteen months in hospital clinics, dispensaries and diagnostic laboratories recognized by the Council on Medical Education and Hospitals of the American Medical Association as competent in the diagnosis and treatment of urological conditions; (*c*) examinations in the medical sciences basic to the specialty of urology, as well as in the clinical, laboratory and public health aspects.

2. An additional period of not less than two years in the practice of urology in the city from which he makes application.

These special requirements conform with the suggestions made by the Council on Medical Education and Hospitals of the American Medical Association.

C. Make application to The American Board of Urology, Inc., whose duty it shall be to investigate the applicant's credentials and make a survey of his character.

D. Assure the board that he is engaged in the practice of urology and that he intends to continue to be so engaged.

E. Membership in the American Medical Association or comparable national medical association is recommended.

FEE

The examination fee is $100 (this fee will be increased when the expense of the examinations and other activities of the board demand). Thirty-five dollars must accompany the application. If, upon investigation, an applicant is found lacking in any of the requirements stated above, he will be notified that he is ineligible for examination. Sixty-five dollars must be paid when the applicant is accepted as a candidate for certification. Neither fee shall be returnable in any event.

If a candidate fails, he will be permitted a second examination after one year or within three years, without additional fee, but he must give sixty days' notice of his intention to appear for reexamination. After an applicant has failed twice, he must file a new application and pay a second fee.

REQUIREMENTS FOR CERTIFICATION

According to the by-laws of the American Board of Urology, Inc., applications received from applicants for certification shall be examined by the Credentials Committee and reviewed by the board. When additional data are required to complete the application, these will be requested by the secretary.

The requirements for certification include: personal appearance before the board; preparation of reports of fifty major urological cases, under the candidate's own supervision, which must contain all items essential for diagnosis, therapy, prognosis, results of treatment, etc.; oral-clinical examinations, and written examinations.

In specific instances, the board may waive any part of these requirements, with the exception of the item of personal appearance.

Each candidate will receive a notice of the time and place of the examinations, and an appointment for his personal appearance before the board.

EXAMINATIONS; REPORTS OF CASE HISTORIES

The board will hold one examination per year. This may be held in association with the annual meetings of the American Urological Association or the American Medical Association, when this is practicable, or at other times and places that the board may select, or deem expedient.

The written examinations are designed to test the candidate's preparation in, and his knowledge of, the whole field of urology including the fundamental subjects: pathology, anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology. These may be given at the time of the oral-clinical examination or may be held on certain dates simultaneously in different parts of the country at places convenient for candidates. The examination in pathology will consist of the identification of gross specimens and sections of tissue observed through the microscope. The examination in anatomy, physiology, embryology, bacteriology, physiological chemistry and endocrinology will be a test of the candidate's working knowledge of these subjects as they are related to the practice of urology.

The oral-clinical examination will consist of discussions of common urological conditions. The subjects forming the basis of this examination are urography; diseases of the genital organs, including the prostate; diseases of the urinary bladder and diseases of the ureters and kidneys. The examination may deal directly with data found in the reports of case histories that the candidates have submitted. It will ascertain the candidate's familiarity with recent literature, the breadth of his clinical experience and his general qualifications for practice in the specialty of urology.

The professional adaptability of each candidate will be investigated in an attempt to determine his ethical conduct and his attitude toward his patients and fellow practitioners.

The reports of 50 major urological cases must be consecutive and must have been under the candidate's own supervision. They must not be abstracted. Sufficient data should appear in these so the examiner will know that a proper history was taken and that a thorough examination, including a complete physical survey, was made.

Case reports that are copied verbatim from a hospital record are not accepted. They must be identified by the name of the hospital and the case admission numbers, with the pertinent dates. The reports must be typewritten on 8½ by 11 paper and in duplicate, but need not be on any special forms.

The data should be placed under proper headings and the arrangement of these should conform to the sequence of events incidental to the patient's admission to the hospital or clinic, the examinations made and treatment prescribed.

The board requires that all of the essential points of the history and examination, as well as a complete description of the surgical procedure, shall be given. Emphasis should be placed on the following items: preoperative diagnosis, clinical and pathological diagnosis, laboratory data, including cultures of urine and chemical analysis of calculi; summary of postoperative course with special reference to morbidity, clinical findings at time of discharge from the hospital and subsequent "follow-up" reports.

A final short paragraph must be prepared for each case. This must include the candidate's interpretation of the history in terms of pathology; the basis for the diagnosis; the facts that determined the treatment prescribed, whether surgical or otherwise; the course of treatment to be pursued following discharge from the hospital or clinic; a critical discussion of the knowledge gained from the proper handling of the case, or from the errors made (if any) in the diagnosis and method of treatment.

Complete separate index lists must accompany the reports. If the reports are obtained from more than one hospital they must be consecutive and a separate index list of each group should be provided. These lists must state the operator's name at the head of each page, the name of the patient, the hospital and admission number and the dates of operation. Statements from the superintendents of the hospitals attesting that the candidate was the operator must be included. The lists will be filed in the secretary's office for verification purposes.

Each candidate must assume personal responsibility for the data in his case reports, including autopsy findings and interpretation of urograms.

A candidate must remember that these case reports are documentary evidence of his ability and that the material in them and the manner of presentation are important evidences of his competence as an urologist.

Satisfactory case reports must be submitted before a candidate will be permitted to continue with other parts of his examination. If case reports are pronounced unsatisfactory by more than one examiner, the candidate will be informed of this and requested to prepare others.

Case reports must be submitted to the secretary of the board at least ninety days before the time set for the oral-clinical examination.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

535 North Dearborn Street - - Chicago 10, Ill.

Cable Address - - - - "Medic, Chicago"

Subscription price - - - - - Twelve dollars per annum in advance

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SATURDAY, SEPTEMBER 4, 1948

THE FORTY-EIGHTH ANNUAL REPORT ON MEDICAL EDUCATION

This issue of The Journal contains the forty-eighth annual report of the Council on Medical Education and Hospitals. In addition to providing detailed statistics and information for the year 1947-1948 on medical education in the United States and Canada, the report comments on a number of important developments related to medical education.

One of the most troublesome problems for medical schools today is the question of enrolments. Since the end of World War II the medical schools have been confronted with numerous appeals to increase their enrolments. The current report of the Council discusses the more important factors that prevent the schools from accepting more students. The most common limiting factor is the lack of personnel and facilities for training more students in the preclinical subjects. Sixty-six of the seventy approved medical schools in the United States have stated that they cannot admit more students with their present facilities for instruction in the preclinical departments. Thirty-seven of these schools have indicated that to admit more students an expansion of their clinical facilities would also be necessary, as have the four schools that did not report a need for additional preclinical facilities. The report discusses the many problems involved in expanding a medical school. Expansion requires much more than providing additional classroom space. Additions to laboratories and hospitals and the expansion of libraries, administrative offices and other central departments would also be necessary. The satisfactory integration of new facilities with existing facilities would present a serious problem for a number of schools. The shortage of teaching personnel as a result of the failure to train sufficient teachers during the war creates a real difficulty for all medical schools considering expansion. It should be clear from the Council's report that the problem of increasing enrolments is not simple and that no school is likely to undertake to expand its facilities unless the need is unmistakably clear and sufficient financial support to meet the expense is assured.

For the second successive year the states without medical schools sent a smaller proportion of their population to medical schools than did states with such schools. If this trend continues, as it seems likely to for the next few years, states without medical schools will undoubtedly give serious thought to establishing schools of their own or to contributing to the support of an established medical school in return for the guarantee that the school will accept a certain number of qualified applicants from the state. For several states that do not have the resources or clinical facilities to maintain a satisfactory medical school, such a plan of regional support would appear to be the most satisfactory solution.

Women comprised 9.5 per cent of all medical students in the United States during 1947-1948. This is the highest proportion of women students ever recorded. However, the percentage of women in the freshman class declined from 11.1 per cent in the preceding year to 7.9 per cent.

The enrolment of veterans in the medical schools and schools of the basic medical sciences in the United States increased from 55.6 per cent in 1946-1947 to 60.9 per cent in 1947-1948. The 1947 freshman class probably represents the peak in the admission of veterans of World War II to medical schools. Veterans numbered 73.4 per cent of the students in this class. Preliminary estimates of the composition of the 1948 freshman class indicate that about 68 per cent of the students will be veterans.

FINANCIAL SUPPORT OF MEDICAL SCHOOLS

For the school year 1948-1949 the budgets of the medical schools total $51,000,000, which is an increase of $8,000,000 over the total for the year 1947-1948. More than $6,000,000 of the increase can be considered as representing additional funds available to medical schools. The balance is accounted for by differences in the methods of computing the budgets for the two periods in question. Despite the increase in funds, the need for additional financial support continues to be one of the most important problems facing the medical schools. To stabilize their present programs and undertake essential new developments, the schools estimate that they will require additional operating funds totaling about $15,000,000 annually.

Until recent years, the financial problems of medical schools have been given little publicity. It is doubtful that either the public or the medical profession have fully realized that tuition covers only a fraction of the cost of educating a medical student and that the high quality of medical education in the United States has been made possible only by the support which medical schools have received through endowments, gifts, university funds and state and municipal tax sources.

While medical schools have been forced to increase tuition fees in recent years, student fees will still provide only 25 per cent of the cost of operating the medical schools in 1948-1949. The average annual tuition fee during the coming year will be $513. Tuition probably cannot be raised substantially beyond this figure without barring from medical school all but the sons and daughters of the well-to-do. Medical schools cannot pass on to the student the full cost of an education which averages more than $2,200 a year.

Medical schools apparently must turn increasingly to the public for support. The question that remains is whether the public will provide this support voluntarily or whether it will have to be provided by direct federal subsidy. With the latter solution appears the possibility that the direction and control of medical education might pass from the hands of medical educators and the medical profession. A prominent educator has pointed out the danger that federal support could lead to the disappearance of initiative and enterprise on the part of the individual schools and could also reduce the schools to "a dead level of uniformity." There is a growing conviction that before federal aid for medical schools is sought an intense effort should be made to secure additional funds from voluntary sources and local units of government. The public has been generous in supporting other medical activities and additional support should be forthcoming if the public can be fully informed of the needs of medical schools.

Most physicians probably would not favor federal subsidies for the basic support of medical education except as a last resort. Since many physicians now in practice are indebted to their medical schools for a part of the cost of their medical education, medical schools should receive the full cooperation of the profession in interesting the public in this financial problem and also in contributing generously to alumni funds.

PREMEDICAL EDUCATION

The development of medical education during the last forty years has been accompanied by significant advances in premedical education. As the medical school course has become more complex and intensive, it has become essential that students entering the study of medicine possess a basic knowledge of the natural and physical sciences and an understanding of scientific method; it is equally important that they have acquired mature habits of study. Medical schools today have no place for the student who cannot apply himself effectively to his work from the outset of his career in medical school.

Thirty-five years ago, a student could enter medical school in this country on graduation from high school, and some medical schools did not then insist on the strict fulfilment of this requirement. In 1914, the Council on Medical Education and Hospitals stipulated that approved medical schools require candidates for admission to have had one year of college work; in 1918 this requirement was increased to two years. Since 1938 the Council has recommended a minimum of three years of college training. At present seventy-five of the eighty-seven medical schools and schools of the basic medical sciences in this country and Canada require at least three years of premedical work.

In recent years the attention of medical educators has been directed more to improving the quality than increasing the duration of premedical education. Traditionally premedical students have taken a preponderance of scientific courses. The extent to which this practice prevails is shown by Vaughn's [1] analysis of the major subjects and fields of undergraduate study of the 13,407 applicants to medical colleges who took the professional aptitude test of the Association of American Medical Colleges. This group included at least two thirds of the applicants for admission to medical schools in the fall of 1947. The analysis showed that 44 per cent of the students majored in biologic sciences, 26.4 per cent in chemistry, 11.3 per cent in premedicine, 6 per cent in other science curriculums, 2.8 per cent in psychology and only 3.8 per cent in the humanities and social sciences. For 5.7 per cent of the group the field of concentration was unclassified.

These figures reveal that the advice of medical educators that students intending to study medicine acquire a broad cultural background has largely gone unheeded. It would appear that premedical students either have not heard or have not given credence to the statements of the medical schools that in passing on a candidate for admission they are more interested in the quality than quantity of the work which he has done in scientific courses. Another explanation may lie in the feeling of premedical students that they will encounter less difficulty in medical school if they have taken a large number of scientific courses in college. For the student with borderline ability there may be some basis for this belief. It is doubtful whether it holds for the average student.

If physicians are to assume successfully the positions of leadership in the community for which their professional training qualifies them and if they are to guide intelligently the future development of their own profession in a changing society, it is essential that their knowledge should not be limited to the fields of science. Once the student enters medical school, and for many years after graduation, his time and energies are almost entirely taken up with professional studies and activities. There is little likelihood that this practice will change. Therefore, if a physician is to have a knowledge of history, literature, philosophy, political science, economics and sociology, his background in these subjects must be acquired during his undergraduate years. Medical educators are convinced of the soundness and desirability of that program.

1. Vaughn, K. W.: Performance on the 1947 Professional Aptitude Test, New York, Graduate Record Office, 1947.

DEFERMENT OF MEDICAL AND PREMEDICAL STUDENTS

The Selective Service Act of 1948 renders liable for service in the armed forces men between 19 and 25 years of age, the age group from which the great majority of premedical and medical students are drawn. Fortunately the Act contains a provision which makes possible the deferment of medical and premedical students under rules and regulations which the President may prescribe.

There does not seem to be any question that the deferment of medical students and physicians in their first year of internship will be authorized. Selective Service officials have indicated that they recognize the importance of allowing a sufficient number of students to continue their premedical education so that the number of students and graduates will not be reduced in the years ahead. Representatives of the Selective Service System have conferred with those of the health professions on a plan for deferring preprofessional students. While the plan that will finally be adopted has not yet been announced, it seems probable that satisfactory provisions will be made for deferring an adequate number of premedical students.

The importance of such a provision cannot be overestimated. The present Selective Service Act affects students who would in the normal course of events be entering medical school as late as the fall of 1953. Its effect on the production of physicians may thus be felt as far in the future as 1957. While veterans and others not liable for military service under the Selective Service Act now comprise a high proportion of the students in medical schools, during the next several years the schools will have to draw more and more of their students from the group liable for military service.

During the latter years of World War II no provision was made for deferring premedical students. When the Army curtailed its training program in medical schools in 1944, the schools were unable to fill all the available places in the entering class for 1945. A decrease in enrolments occurred that was kept from progressing to serious proportions the next year only by the unexpectedly early termination of the war. In the interest of the nation's health and safety, the possibility of such an eventuality cannot be allowed to occur again.

Of great importance to medical education also is the assurance of a continuing supply of trained teachers and investigators in the basic medical sciences. One of the major obstacles at present to expanding the facilities for medical education in this country is the lack of trained teachers which resulted from the almost complete cessation of graduate study during the war. At least another five years will be required to make up the deficiency of teachers. It is important, therefore, that the Selective Service System also make provisions for the deferment of an adequate number of graduate students in the basic medical sciences.

Current Comment

THE CONTINUING EDUCATION OF PHYSICIANS

In the report of the Council on Medical Education and Hospitals in this issue of THE JOURNAL, the total recorded attendance at refresher and continuation courses in the United States during the twelve month period July 1, 1947 to June 30, 1948 was reported to be 82,803. This figure, which does not include the attendance at 114 courses for which no attendance records were submitted, represents more than 40 per cent of the total number of living physicians in the United States. Figures for the total attendance at scientific meetings of the American Medical Association, state medical societies, county medical societies and the many special medical societies, if compiled, would furnish additional impressive evidence of the extent to which the physicians of this country voluntarily continue their education after graduation from medical school. Even these figures would not give the entire record, since they would not measure the continuing education that physicians obtain from the study of medical journals and books. Postgraduate and continuation courses were popular even before the war. After a temporary decline during the war years, the number of courses offered and the attendance have been increasing each year. It seems certain that this form of continuing education will remain one of the important methods by which physicians will fulfil their obligations to their patients of keeping abreast of advances in medical science.

RHEUMATIC BRAIN DISEASE

The incidence of rheumatic cardiac disease in a group of 500 unselected necropsies done at the Central Hospital at Indianapolis was 5 per cent. This figure, according to Breutsch,[1] probably represents the prevalence of subclinical rheumatic fever in the population of an average mental hospital located in the same geographic latitudes. Neuropathologic studies reported by the same author revealed the occurrence of rheumatic obliterating arteritis in the brain of persons with rheumatic cardiac disease. This late cerebral sequel of rheumatic fever involved mainly the small meningeal and cortical vessels, producing gross or microscopic softenings in the cortex. Breutsch [2] stressed that rheumatic brain disease may occur months and years after the acute stage of rheumatic fever, at a time when the person is enjoying apparent good health. The late vascular lesions of rheumatic fever are not infrequently seen in middle life, and may be responsible in a number of aged patients for psychoses characteristic of that period. The finding at necropsy that 9 per cent of the patients with dementia precox showed signs of rheumatic infection involving the brain, as well as the cardiac valves, raises the question as to the possible pathogenic role of the rheumatic infection in the causation of dementia precox in a definite subgroup of cases.

1. Breutsch, W. L., in Ninety-Ninth Annual Report of the Central State Hospital, Indianapolis, 1947.
2. Breutsch, W. L.: Rheumatic Brain Disease: Late Sequel of Rheumatic Fever, J. A. M. A. 136:450-453 (May 31) 1947.

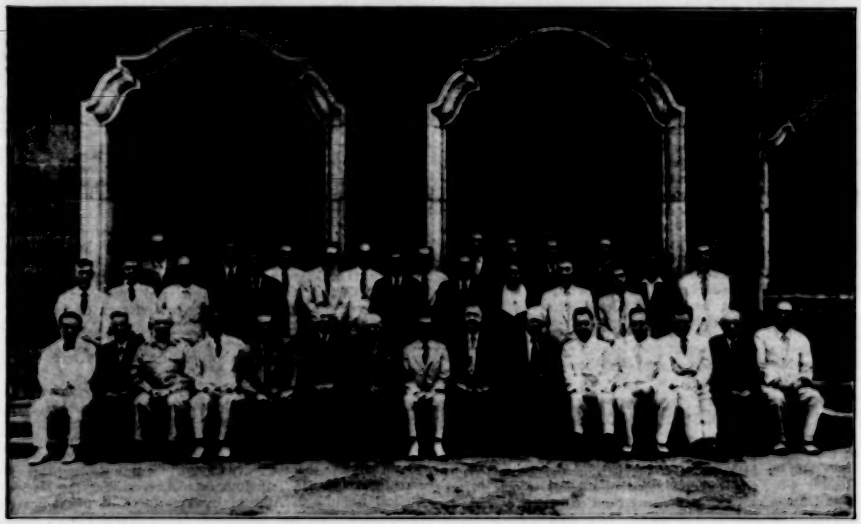
ORGANIZATION SECTION

Official Notes

A.M.A. OFFICIALS VISIT JAPAN

On August 14 Dr. R. L. Sensenich, President, and Dr. E. L. Henderson, Chairman of the Board of Trustees of the American Medical Association, returned to the United States from Japan. They were members of a delegation of five who went to Japan on the invitation of General Douglas MacArthur and Brigadier General Crawford F. Sams. Drs. Ernest E. Irons, E. J. McCormick and John H. Fitzgibbon will return in a week or ten days.

Any official report made by this group will go to General MacArthur. However, Drs. Henderson and Sensenich both were enthusiastic over the reception they received in Japan, both from the American officials and the members of the Japanese medical profession. There was ample opportunity for an exchange of ideas between the American Medical Association officials and the individuals who are guiding the affairs of the Japanese profession. Under the old régime, the Japanese Medical Association was a government-controlled organization. At the present time it is organized along lines similar to those of the American Medical Association. Japanese physicians are enthusiastic over this arrangement and had many things to discuss with the Americans.



American Medical Association officers with officials from Civil Affairs Section of General MacArthur's headquarters and a group of officers and members of Japanese Medical Associations. Seated, from left to right: J. Kuroswa (reception committee), R. Inada (expresident), Colonel Johnson, S. Kawakita (vice president), Dr. Edward J. McCormick, Dr. John H. Fitzgibbon, Dr. R. L. Sensenich, A. Takahashi (president), Dr. Elmer L. Henderson, Dr. Ernest E. Irons, T. Iseki (vice president), Major Malton, Mr. Anton, T. Kitajima (expresident) and T. Nakayama (preceding president). Standing: Y. Minamizaki (secretary), H. Mita (supervisor), R. Kobayashi (supervisor), K. Kodama (supervisor), T. Murayama (reception committee), T. Ogata (reception committee), Y. Ono (reception committee), H. Oka (director), T. Sassa (director), H. Takeuchi (director), H. Hashimoto (reception committee), R. Azuma (director), S. Furuhata (director), name unknown, K. Sadakata (reception committee), name unknown, K. Kato (reception committee), name unknown, name unknown, A. Saita (government official of the Welfare Ministry), and name unknown.

Washington Letter

(From a Special Correspondent)

Aug. 30, 1948.

First Meeting of Heart Council

September 8 has been scheduled for the first meeting of the new National Advisory Heart Council, which will guide the Surgeon General of U. S. Public Health Service in administering the National Heart Act enacted recently by Congress. Composed of six professional experts and six leaders in public welfare and business, the Council's membership is as follows: Drs. T. Duckett Jones, Helen Hay Whitney Foundation; Irvin Page, Cleveland Clinic; Paul D. White, Massachusetts General Hospital (Boston); Tinsley Harrison, Southwestern Medical College; B. O. Raulston, University of Southern California School of Medicine, and C. A. Elvehjem, University of Wisconsin biochemist; James S. Adams, New York businessman; E. B. MacNaughton, Portland, Ore., publisher; Mrs. Albert D. Lasker, New York health worker and philanthropist; Ernst Mahler, Wisconsin businessman; Maurice Goldblatt, Chicago merchant-philanthropist, and Albert J. Wolfe, president of Touro Infirmary, New Orleans.

Construction Bids for Clinical Research Center Opened

Low bid of $3,273,000 was submitted for the first stage of construction of the clinical research center to be erected by the U. S. Public Health Service in Bethesda, Md. Bids were opened August 10 by the Public Buildings Administration, and award of the contract was expected to follow soon thereafter. A total of $40,000,000 has been earmarked for construction and equipment of the huge center, which will have a 500 bed hospital and house laboratories of the National Institutes of Health.

GOVERNMENT SERVICES

ARMY

REGISTRY OF CARDIOVASCULAR PATHOLOGY

The Surgeon General of the Army and the director of the Army Institute of Pathology have approved the application of the American Heart Association to sponsor a Registry of Cardiovascular Pathology with the American Registry of Pathology Division of the Institute. Dr. Wallace Yater, Washington, D. C., has been appointed chairman of the registry committee by the American Heart Association.

COURSES IN CIVILIAN INSTITUTIONS

The following additional fifteen medical department officers will attend courses in the civilian institution indicated: Col. Charles T. Young, Harvard, internal medicine; Major Robert B. Lindberg, University of Michigan, bacteriology; Major Woodrow C. Herbert, University of California, San Francisco, pharmacy; Major Frank B. Rogers, Columbia University, library science; Major George H. Zacherle, Colorado State College of Agriculture and Mechanical Arts, special problems in surgery and research in surgery; First Lieut. Robert B. Fisher, George Washington University, orthoptics; First Lieut. Robert H. Moser, Gallinger Municipal Hospital, Washington, D. C., intern training; First Lieut. William F. Colliton, Providence Hospital, Washington, intern training; First Lieut. Park C. Jeans Jr., University Hospital, Augusta, Ga., intern training; First Lieut. Armand E. Hendee, Grady Memorial Hospital, Atlanta, Ga., intern training; First Lieut. Harry W. Orme, University of Minnesota Hospital, intern training; First Lieut. Richard K. Cole, Baltimore City Hospitals, intern training; First Lieut. William H. Hall, New York Hospital, intern training, and First Lieut. Lawrence J. Get, Metropolitan Hospital, New York, intern training.

SURGEON GENERAL PRAISES WORK IN EUROPEAN THEATER

The following letter, slightly abbreviated, was written by the Surgeon General of the Army to the Chief Surgeon in the European Theater.

Dear General Noyes:

In four weeks in Germany and Austria I have seen a cross section of the Army medical activities in Europe. During some of this time one of the groups of the leading American medical consultants who visit the European Theater each month for the Surgeon General have been with me.

I have been greatly impressed with the quality of the entire Medical Department service. Both medical administrative and purely professional work is superior. Health conditions are excellent and the sick rate is extremely low.

The patients are receiving care which parallels the care and treatment patients receive in the best hospitals in the United States. Most of this care is under the immediate attention of the younger group of medical officers. These officers are able, alert, careful and show a remarkable degree of understanding. The excellent training they have received in their years of college, medical school and hospital work is clearly evident. They reflect great credit on American medicine.

It has been a privilege to see all of this at first hand. This service performed with ability and good will reflects credit on the Army. I congratulate the Medical Department personnel on their devotion to duty and to its excellent performance.

R. W. Bliss,
Major General,
The Surgeon General.

PERSONAL

Morton M. Rayman, Ph.D., has been appointed chief of the Microbiologic Branch of the Food Research Division, Quartermaster Food and Container Institute for the Armed Forces, Chicago. Dr. Rayman will direct research on the nature and factors affecting the microbiologic and histologic changes which occur during the processing and storage of foods for the armed forces.

NAVY

EXAMINATIONS FOR APPOINTMENT IN REGULAR CORPS

Examinations for the selection of candidates for appointment to the grade of lieutenant (jg) in the Medical Corps of the Navy will be held at Naval hospitals in the United States October 4-8. Graduates of approved medical schools in the United States or Canada who have completed intern training in accredited hospitals or who will complete such training within four months of the date of the examination, and who are physically and otherwise qualified, are eligible to take the examination. They must be less than 32 years of age and will be required to appear before boards of medical examiners at the Naval hospital nearest their place of residence. Following approval by the President of the United States, selected candidates will receive appointment and orders assigning them to duty in a Naval medical facility for active Naval service.

Public Law 365—80th Congress, approved Aug. 5, 1947, provides additional compensation of $100 a month for each month of active service performed by Medical Corps officers. This is in addition to any pay or allowances that Medical Corps officers are otherwise entitled to receive. The amount paid to any one officer under this authority is limited to a total of $36,000 computed on the basis of $1,200 yearly over a period of thirty years' active service. Detailed information may be obtained from Naval Officer Procurement offices or from the Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

ADMIRAL PUGH RETURNS FROM AFRICA

Rear Admiral Lamont Pugh has returned from a visit to the Navy's medical facilities in the Mediterranean and African areas. He states that the Egyptian government and the Navy's Research Unit in Cairo have the most cordial relations and that the lease on the property being used by the Navy in Cairo has been renewed. Admiral Pugh also visited Nairobi in Central Africa, where the Navy's Medical Research Unit which is accompanying the University of California's African expedition is located. It was in this area that the Navy captured the rare elephant shrews recently reported in THE JOURNAL. After visiting the Navy's medical facilities in Athens, Greece, as well as those of the Sixth Task Fleet and the United States Naval Forces, East Atlantic and Mediterranean, Admiral Pugh returned home via Germany and England.

JOINT SERVICES EXHIBIT

At the fiftieth annual convention of the American Hospital Association in Atlantic City, N. J., September 20, the Bureau of Medicine and Surgery will enter into a joint exhibit with its sister services showing how medical care is provided by the government services. This exhibit will point out what federal agencies operate hospital services, geographic location of these facilities, and for what persons they are operated; it will also show the number of medical personnel involved, and the training programs sponsored by each agency. The U. S. Naval Hospital Ship *Consolation* will be anchored off Atlantic City during the convention, and transportation for members of the convention to the hospital ship will operate from Starn's Pier.

RETIRED OFFICERS VOLUNTEER

The following medical officers on the retired list have volunteered for recall to active duty to aid in relieving the present shortage of medical officers: Capt. Enoch G. Brian, Coronado, Calif.; Capt. Harrison L. Wyatt, Berkeley, Calif.; Comdr. Norman J. Haverly, Long Beach, Calif., and Lieut. Bernard L. Rhodes Jr., Live Oak, Fla.

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VETERANS ADMINISTRATION

RESIDENTS WANTED FOR TRAINING IN PSYCHIATRY

The Veterans Administration has immediate openings for at least one hundred young doctors interested in residency training in psychiatry or neurology. Veterans Administration hospitals offering these residencies are situated in almost every section of the country and all are under supervision of the deans' committees, mostly composed of members of university faculties of class "A" medical schools.

Applicants for residency training must be citizens of the United States, graduates of a school of medicine approved by Veterans Administration and the Council on Medical Education and Hospitals of the American Medical Association, and must have completed an internship acceptable to Veterans Administration. In general, these residencies cover a three year program of specialty training, although one and two year programs are available at most of the hospitals. Information may be obtained by writing the Chief Medical Director, Veterans Administration, Washington 25, D. C.

Residency selection and residency grades for the individual are recommended by the deans' committee supervising the program at the Veterans Administration hospital in which the applicant desires to train.

The Veterans Administration is organizing a new class of residents in psychiatry for training, for example, in the new Veterans Administration hospital in Tomah, Wis. Completion of the class is anticipated by September 1. Residents in the Tomah hospital will rotate between the university's psychiatric institute in Madison, Wis., and the hospital on a six months' basis. The residents will devote part of their school time to the Madison Veterans Administration outpatient clinic for neuropsychiatric patients. The new and well equipped hospital in Tomah accommodates 1,200 patients.

Three grades of residents have been established: senior at $3,000 a year, intermediate at $2,700 and junior at $2,400. Grade of appointment is determined by recommendations of the deans' committee. Applicants should send a complete biographic sketch and detailed information covering medical experience to Dr. Lorenz, University of Wisconsin Medical School, 1300 University Avenue, Madison.

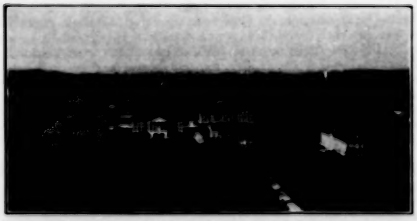
CHIEF OF RESEARCH APPOINTED

The Veterans Administration announces that Dr. Alfred H. Lawton, formerly dean, University of North Dakota School of Medicine at Grand Forks, has been appointed chief of general medical research in the Veterans Administration Department of Medicine and Surgery, Washington, D. C. Dr. Lawton, who assumed his new duties August 1, is supervising studies of epilepsy, hepatitis, psychoneuroses and other diseases suffered by veterans. He succeeds Dr. L. G. Welt, who resigned to return to the department of internal medicine at Yale University Medical School, New Haven, Conn. Dr. Lawton received his M.D. and Ph.D. degrees from Northwestern University, interned in Passavant Memorial Hospital, Chicago, and took residency training in surgery at the Henry Ford Hospital, Detroit. He was a research fellow at Northwestern University and later an assistant professor in the University of Arkansas School of Medicine. During World War II he served with the United States Public Health Service.

PUBLIC HEALTH SERVICE

THE NEW CLINICAL RESEARCH INSTITUTION

The Federal Security Administrator announced on June 29 plans for the clinical research institution to be constructed for the National Institutes of Health at Bethesda, Md. The thirteen story building will house the National Heart Institute, the National Institute of Mental Health, the hospital facilities of the National Cancer Institute, the National Institute of Dental Research, and services for studying patients with infectious and tropical diseases. The laboratories will occupy two thirds of the building, and the five hundred bed hospital will receive patients from all parts of the country referred by physicians, hospitals and other health agencies on the basis of problems under study at various times. This unusual combination of hospital and laboratory facilities within a single structure will make possible an attack by physicians and laboratory workers on clinical medical problems—cancer, heart disease, mental illness and other degenerative diseases. This institution will be located a few miles north of the District of Columbia in Maryland, partially on the estate given to the government by Mr. and Mrs. Luke I. Wilson, now used for the National Institute of Health, and partially on adjoining ground. The site is readily accessible from Washington by automobile and bus. The hospital will have the most modern facilities for patients. Throughout the institution special opportunities for study will be made available for qualified physicians and research workers. The unusual design of the building, the special equipment and research teams will give also unique postgraduate opportunities to physicians and scientists as well as members of the regular staff.



The National Institute of Health, near which the new clinical research institute will be constructed.

TRAINING MENTAL HEALTH PERSONNEL

The mental health program authorized by Congress in 1946 received an appropriation of $9,028,000 for the fiscal year 1949 which will be used to finance a program of research on mental illness, to develop local mental health facilities, to train mental health personnel, all in addition to mental health activities within the U. S. Public Health Service. For grants-in-aid to states, Congress appropriated $3,555,000, which will be allocated to states on the basis of their population, financial need and extent of the mental health problem. The National Advisory Mental Health Council recommended numerous grants to universities, hospitals and clinics to support their training programs, and these grants were approved by the Surgeon General of the Public Health Service, the Federal Security Administrator announced on July 28. The Council making these recommendations considered applications for 205 training grants and 1,099 training stipends, of which it recommended approval of 143 training grants and 561 stipends. With the funds appropriated by Congress for 1949 it was possible to award 86 training grants and 264 training stipends.

PERSONAL

Dr. Maynard H. Mires Jr. has been assigned as epidemiologist with the Mississippi State Board of Health, succeeding Dr. George Reed, who has been transferred to a Marine hospital in Ohio.

Medical News

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ALABAMA

State Society Appoints Public Relations Director.—The Medical Association of the State of Alabama has named William A. Dozier Jr., of Hurtsboro, a graduate of the University of Alabama and Harvard, as public relations director. He assumed his duties July 1. After spending some time with directors of other states, he will meet with Alabama's several county medical societies.

ARKANSAS

Heart Association Formed.—On July 16 a group of physicians in the state organized the Arkansas Heart Association with the following officers: president, Dr. Joseph T. Roberts, dean, University of Arkansas School of Medicine, Little Rock; secretary-treasurer, Dr. John E. Greutter, Little Rock. This organization will operate in accord with the principles of the American Heart Association.

Dr. Duffy to Head Department.—Carl E. Duffy, Ph.D., has been appointed head of the department of bacteriology and parasitology of the University of Arkansas School of Medicine, Little Rock, effective August 1. Dr. Duffy was formerly associate professor of bacteriology at Wayne University College of Medicine, Detroit. Formerly he was with the Rockefeller Institute for Medical Research as a research bacteriologist and with the University of Cincinnati College of Medicine. Dr. Duffy received his Ph.D. degree in 1940 from the University of Cincinnati. During the war he conducted research work on Japanese encephalitis virus at the Rockefeller Institute.

CONNECTICUT

Personal.—Ira V. Hiscock, Sc.D., chairman, department of public health, Yale University School of Medicine, has been reelected head of the New Haven County Chapter of the National Foundation for Infantile Paralysis.

Committee on Foods, Drugs and Cosmetics.—The Connecticut Committee on Foods, Drugs, Cosmetics, and Devices has been organized to work with the state's enforcement agencies in protecting public health. Sponsored by the Connecticut State Medical Society and the Connecticut Pharmaceutical Association, the committee comprises representatives from eight leading institutions and societies. The general purpose will be to furnish information at the request of state agencies and accredited groups. It may act spontaneously in instances of widespread danger to health. The committee plans to meet in September for further organization. Among the committee members are: Dr. G. Gray Carter, Greenwich, representing the Connecticut State Medical Society; Professor Nicholas W. Fenney, New Haven, the Connecticut Pharmaceutical Association; Dr. William T. Salter, New Haven, Yale University School of Medicine; Jesse J. Englander, D.D.S., Bridgeport, Connecticut State Dental Association; Harold G. Hewitt, University of Connecticut College of Pharmacy; Stanley E. Wedberg, University of Connecticut, and Richard T. Gilyard, D.V.S., Waterbury, Connecticut State Veterinary Association.

ILLINOIS

Telephone Transmission of Lectures on Cancer.—Lectures on recent advances in cancer of the oral cavity will be offered by the University of Illinois College of Dentistry, Chicago, in cooperation with the Illinois Division of the American Cancer Society, Illinois State Medical Society and the Illinois State Dental Society, beginning October 6. The lectures will be given on six consecutive Wednesdays from 7:30 to 9:30 p. m. Arrangements have been made for transmitting the lectures by telephone to groups of physicians in Belleville, Peoria, Rockford, Springfield and Urbana. The final period on November 10 will be devoted to round table discussions. The lecturers will comprise Drs. John A. Rogers, Chicago, of the American Cancer Society; Andrew C. Ivy, vice-president, University of Illinois; Donald A. Kerr, University of Michigan; Hamilton B. G. Robinson, Ohio State University; Roger A. Harvey, University of Illinois, and Stanley D. Tylman and Louis T. Byars, Washington University School of Medicine, St. Louis.

Chicago

Mental Hygiene Director Wanted.—The position of director of the Mental Hygiene Section of the Chicago Department of Public Health, offering $10,000 per year, is open. The Mental Hygiene Section will assume responsibility for developing and implementing a mental hygiene educational program for the city. Information may be obtained from Dr. Lewis J. Pollock, chairman, Advisory Committee on Mental Health Program, Chicago Board of Health.

Personal.—Dr. Michael H. Streicher, associate professor of medicine, University of Illinois, was installed as president of the Medical Alumni Association of the university at the annual luncheon, May 11.——Dr. William S. Hoffman, director of biochemistry at The Hektoen Institute for Medical Research of the Cook County Hospital, has been appointed professorial lecture in physiology at the University of Illinois, College of Medicine, effective September 1.——Dr. Herbert R. Kobes, Springfield, director of the University of Illinois' Division of Service for Crippled Children, has been appointed to the advisory committee of the U. S. Children's Bureau.——Dr. Frederick Plotke, Chicago, has been appointed chief of the division of venereal disease of the Chicago Health Department, succeeding Dr. Theodore J. Bauer, recently named to the venereal disease division of the U. S. Public Health Service.

MISSOURI

Dr. Stubbs Appointed Dean.—Dr. Trawick H. Stubbs, assistant dean and associate professor of preventive medicine at Emory University School of Medicine, Atlanta, Ga., has been appointed dean of the University of Missouri School of Medicine, Columbus, effective September 1. He was graduated from the university in 1940 and had been an assistant surgeon in the U. S. Public Health Service. Dr. Dudley S. Conley, dean since 1933, is retiring.

Personal.—The Governor has reappointed Dr. William O. Finney, Chaffee, and Dr. Paul A. Knepper, St. Joseph, to the Missouri State Board of Medical Examiners for a four year term, effective July 1.——Dr. Devilla D. Edmonds, Kansas City, was selected by his colleagues as the outstanding general practitioner of the year and was presented a certificate bearing the citation at a meeting of the Kansas City Association of the American Academy of General Practitioners in June.

NEW YORK

Postgraduate Lectures.—A series of four postgraduate lectures has been arranged for the Orange County Medical Society at 8:30 p. m. at the Court House, Goshen.

September 14.	Charles L. Fox Jr., New York, Electrolytes in Shock in Relation to Blood and Plasma.
September 28.	Henry D. Diamond, New York, Significance of Enlarged Lymph Nodes.
November 9.	Abraham H. Aaron, Buffalo, Evaluation of the Common Drugs in General Practice.
November 23.	Herbert S. Weichsel, New York, Trauma and Peripheral Vascular Disease.

The Allegany County Medical Society, on September 9 at 12:30 p. m., Bolivar Country Club, Bolivar, will hear Dr. Charles LeRoy Steinberg, Rochester, speak on "Chronic Arthritis—Its Diagnosis and Management." The Richmond County Medical Society meeting at Old Mill, Hyland Boulevard, Staten Island, on October 13, 9:30 p. m., will hear Dr. Linn J. Boyd, New York, speak on "Pulmonary Embolism." The instruction is provided by the Medical Society of the State of New York with the cooperation of the New York State Department of Health.

New York City

Reorganize Health Department.—The New York City Department of Health has been reorganized into five major groups of department activity with the following in charge: Dr. Samuel Frant, deputy commissioner since 1946, takes over the newly created post of first deputy commissioner and will supervise the new community health services division. Matthew A. Byrne, former deputy commissioner in charge of administrative services, will assume additional administrative responsibilities. Dr. Ralph S. Muckenfuss, director of the bureau of laboratories, as an assistant commissioner, will direct the preventable diseases and adult hygiene services division. Dr. Leona Baumgartner, director of the bureau of child hygiene, is another assistant commissioner, in charge of the maternal and child health services division. Jerome Trichter, former director of the bureau of food and drugs, as third assistant commissioner will supervise the environmental sanitation services division. Harry Hollander will be head of the health department's legal division.

Prosthetic Specialist Joins Rehabilitation Staff.—Earl H. Daniel, formerly prosthetic specialist for the Veterans Administration, Washington, D. C., has been appointed chief of the prosthetic service, Institute of Rehabilitation, New York University-Bellevue Medical Center. Mr. Daniel, himself an amputee, has been for thirty-seven years active in the development of medical rehabilitation for amputees. He is chairman of the Committee on Prosthetic Devices of the National Rehabilitation Council, consultant to the Division of Procurement of Prosthetic Devices of the United Nations and amputee consultant of the United Mine Workers. The prosthetic service will sponsor a program of care, teaching and research to aid in the development of practices and technics for amputees. The new service provides a consultation department where doctors may send amputees to receive a prescription for artificial limbs, reference to appropriate manufacturers, adjustments and revisions needed to continue wearing finished limbs and training in the use of such limbs. Dr. Howard A. Rusk is chairman of the department of rehabilitation.

PENNSYLVANIA

Allergists Meet at Wilkes-Barre.—A forum on allergy, under the auspices of the Central Pennsylvania Allergy Society, will be held at Luzerne County Medical Society Building, Wilkes-Barre, October 14. Scientific sessions, beginning at 1:30 p. m., will include food allergy, the treatment of asthma by the general practitioner, papular urticaria, the present status of antihistamine drugs and bronchoscopy as applied to allergy. The annual dinner will be held at the Hotel Sterling at 6:30 p. m.

Philadelphia

Add Department of Oncology.—The Woman's Medical College of Pennsylvania has announced the opening of a new department of oncology under the direction of Dr. Isabella H. Perry, San Francisco. Dr. Perry, a graduate of the Woman's Medical College, 1921, has been assistant professor of pathology at the University of California Medical School, Berkeley-San Francisco, and coordinator of its cancer program since 1945. Previously she had been with the U. S. Public Health Service Reserve.

Camp for Diabetic Children.—The Department of Public Health of Philadelphia reports that the Philadelphia Metabolic Association has purchased 15 acres on Perkiomen Creek, above Spring Mount, for a summer camp for diabetic children, to be operated under the auspices of the John B. Deaver Memorial Auxiliary of the Lankenau Hospital. Diabetic children aged 6 to 16 are eligible on recommendation by their physicians and subject to approval by the camp committee. Parents contribute from nothing to $5 a day toward the support of each child, according to ability to pay. Transportation from Philadelphia and all medical expenses are provided, except insulin, which each child brings with him. Inquiries may be addressed to Miss Clara Woodward, Executive Secretary, Philadelphia Metabolic Association, 1530 Spruce Street, Philadelphia 2.

Changes in Faculties.—Dr. Peter A. Herbut, assistant professor of pathology, Jefferson Medical College of Philadelphia, has been made professor of pathology to succeed Dr. Virgil H. Moon, who is retiring at the end of this year. Dr. George A. Bennett, formerly associate professor of anatomy, was made professor and director of the Daniel Baugh Institute of Anatomy at the college, succeeding Dr. J. Parsons Schaeffer, who retired last month. Dr. Clarence S. Livingood, assistant professor of dermatology and syphilology, University of Pennsylvania School of Medicine, has been appointed professor of dermatology, succeeding Dr. Frank C. Knowles, retired. M. John Boyd, Ph.D., associate professor of biological chemistry at the University of Cincinnati College of Medicine, has accepted the position of professor of chemistry and head of the division of chemistry at the Hahnemann Medical College and Hospital of Philadelphia, effective September 1.

Pittsburgh

Laboratory for Industrial Hygiene.—The Industrial Hygiene Foundation, Pittsburgh, has arranged with the Elizabeth Steel Magee Hospital, part of the University of Pittsburgh Medical Center, to occupy a laboratory building providing facilities for expansion of the foundation's basic researches in industrial health. It is proposed to develop an organization for the primary use of the members along the following lines: (1) toxicologic studies, (2) research in industrial hygiene methods along the line of development of new instruments, method of analysis and procedures for use in practical field work and (3) engineering research under controlled laboratory condition, such as air cleaning methods and ventilation requirements. The industrial Hygiene Foundation is a nonprofit research association of industries for advancing industrial health and improving working conditions.

SOUTH DAKOTA

Three Day Cancer Symposium at Sioux Falls.—The South Dakota Division of the American Cancer Society in cooperation with the State Board of Health will present a cancer symposium at the Coliseum, Sioux Falls, October 11-13. Physicians of Nebraska, Iowa and Minnesota are invited. The program includes the following:

Brewster S. Miller, New York, The American Cancer Society.
Robert L. Cherry, Kansas City, Mo., Role of the U. S. Public Health Service in Cancer Control.
Cornelius P. Rhoads, New York, Cancer Research.
John R. McDonald, Rochester, Minn., The Papanicolaou Stain for Diagnosis of Cancer.
Elbert De Coursey, Ft. Sam Houston, Texas, Pathologic Diagnosis of Cancer.
Douglas Quick, New York, Tumors of the Mouth, Accessory Sinuses and Salivary Glands.
Max Cutler, Chicago, Radiologic Treatment of Neoplasms of Head, Neck and Larynx.
Ferdinand C. Helwig, Kansas City, Mo., Special Pathology of Thyroid Tumors.
Arnold S. Jackson, Madison, Wis., Treatment of Thyroid Tumors.
John V. Goode, Dallas, Texas, Neoplasms of the Skin and Fascia.
Charles L. Martin, Dallas, Texas, Radiologic Treatment of Neoplasms of Skin.
Murray M. Copeland, Washington, D. C., Benign Tumors of the Breast.
William C. White, New York, Malignancies of the Breast.
Edwin D. Bayrd, Rochester, Minn., Lymphomas.
Charles G. Johnston, Detroit, Pre- and Post-Operative Care of the Cancer Patient.
Thomas J. Kinsella, Minneapolis, Minn., Treatment of Pulmonary Mediastinal Tumors.
Robert E. Fricke, Rochester, Minn., Radiologic Treatment of Chest Tumors.
Ernest Sachs, St. Louis, Mo., Neoplasms of Cranial Nerves, Spinal Cord and Peripheral Nerves.
Henry C. Marble, Boston, Diagnosis and Treatment of Bone Tumors.
Joe V. Meigs, Boston, Surgical Treatment for Cancer of the Cervix and Fundus Uteri.
Charles D. Creevy, Minneapolis, Minn., Diagnosis and Treatment of Malignancies of the Bladder and Prostate, Kidneys and Testicles.
Karl A. Meyer, Chicago, Carcinoma of the Upper Gastro-Intestinal Tract.
Raymond W. McNealy, Chicago, Carcinoma of the Colon and Rectum.

There is no registration fee.

TEXAS

University Personals.—Dr. George R. Herrmann, professor of internal medicine and director of the cardiovascular laboratory, University of Texas Medical Branch, Galveston, has been appointed a member of the staff of the Cardiology Institute of Mexico City. The appointment was made in order to include Dr. Herrmann in the teaching staff of the institute in the postgraduate programs.——Dr. Jack R. Ewalt, professor of neuropsychiatry and director of the Psychopathic Hospital of the university, has been appointed by ex-President Herbert Hoover's commission on the reorganization of the executive branch of the federal government to survey mental hospitals operated by the government.

WISCONSIN

State Medical Meeting.—The annual meeting of the State Medical Association of Wisconsin will be held at the Hotel Schroeder, Milwaukee, October 4-6, under the presidency of Dr. William D. Stovall, Madison. The scientific sessions will begin with a morning of clinical conferences at three Milwaukee hospitals. Speakers at the scientific assemblies include:

Norman H. Topping, Bethesda, Md., Research Progress on the Common Cold.
Evarts A. Graham, St. Louis, Carcinoma of the Lung.
Henry W. Brosin, Chicago, Emotional Aspects of Organic Diseases.
John B. Youmans, Chicago, Place of Nutrition in Medical Practice.
Hugh P. Greeley, Boston, Iatrogenic Disease.
Arnold L. Gesell, New Haven, Conn., Clinical Science of Child Development.
Michael E. DeBakey, New Orleans, Surgical Complications of Amebiasis.
Richard H. Freyberg, New York, Arthritis of the Spine—Diagnosis and Management.
Harry M. Murdock, Baltimore, Theresa Rogers Memorial Lecture in Psychiatry: Some Aspects of Treatment of Emotional Illness.
Joseph L. Baer, Chicago, Office Gynecology.
Owen H. Wangensteen, Minneapolis, Minn., The Ulcer Problem.
Byrl R. Kirklin, Rochester, Minn., Cancer of the Stomach.
Charles H. Watkins, Rochester, Minn., Treatment of Leukemia.

Round table scientific luncheons, limited with the exception of the obstetric demonstrations to twenty-five participants, have been planned for each day. Section meetings will be held the afternoon of October 6. At the annual dinner October 5 Harold C. Urey, Ph.D., D.Sc., Nobel Prize winner, Chicago, will speak on "Social Implications of Atomic Energy."

GENERAL

Red Cross Recruits Nurses for Poliomyelitis.—By August 1, the American Red Cross had recruited 630 nurses for chapters across the country in response to nursing needs for poliomyelitis. It had provided 306 nurses for North Carolina, a few for South Carolina, and sent 90 nurses from Midwestern states into Texas, California and scattered sections of Iowa, Illinois, the Dakotas, Minnesota, Wisconsin and Arkansas. Pacific area chapters provided 181 nurses for California and for Boise, Idaho. The National Foundation for Infantile Paralysis pays transportation and salaries for poliomyelitis nurses.

Assets of American Hospitals.—According to the 1948 Hospital Directory published by the American Hospital Association, the average cost of caring for a patient for one day in a general hospital rose from $9.39 to $11.09 in the year 1946-1947. The average income from patients was $9.71, leaving a daily deficit of $1.38 per patient to be made up through voluntary contributions and gifts from the public. General hospitals had about 151 employees for every 100 patients to maintain prevailing high standards of patient care. Hospitals spent about $400,000,000 more in 1947 than in 1946, because of high wages, higher prices and expanded services. Hospitals in 1947 had total assets of about $6,000,000,000, which is more than $42 for every man, woman and child in the United States. Of that amount, general hospitals' plant valuation represents almost $3,500,000,000, an average of $7,500 per bed.

Society Elections.—At the joint meetings of tuberculosis associations in New York, Dr. Herbert L. Mantz, Kansas City, Mo., was chosen president, and Dr. Rollin D. Thompson, Orlando, Fla., president elect of the National Tuberculosis Association.——The newly elected president of the American Trudeau Society is Dr. H. Corwin Hinshaw, Rochester, Minn., and the president elect is Dr. Kirby S. Howlett Jr., Shelton, Conn.——Officers elected by the Conference of State and Provincial Health Authorities of North America at the annual meeting in Chicago, June 25-26, include Drs. John T. Phair, Toronto, Canada, president, and Russell O. Saxvik, Bismarck, North Dakota State Health Officer, secretary-treasurer.——At the annual meeting of the American College of Chest Physicians in Chicago in June, Dr. Richard H. Overholt, Brookline, Mass., became president, Dr. Joseph C. Placak, Cleveland, was chosen president elect and Dr. Minas Joannides, Chicago, treasurer. Murray Kornfeld, Chicago, remains executive secretary.

Scholars in Medical Science.—Medical schools in the United States and Canada are invited by the John and Mary R. Markle Foundation to make nominations for the second group of Scholars in Medical Science on or before December 1. Each school, through the dean, may nominate one candidate. The program is designed to aid promising young men and women planning careers in academic medicine, who have not yet made their reputations. They should have completed the usual fellowship training in some area of science related to medicine and should hold, or expect to hold, in the academic year 1949-1950 a full time faculty appointment on the staff of a medical school. Grants of $25,000, payable at the rate of $5,000 annually, will be made to the schools over a five year period for the support of each scholar finally selected, his research, or both. Sixteen were chosen in 1948. A booklet describing the plan is available on request from the foundation, 14 Wall Street, New York 5.

Scholarships for Study of Cerebral Palsy.—Eight physicians, surgeons and therapists have been awarded scholarships for specialized training in cerebral palsy by the National Society for Crippled Children and Adults. This is the first national scholarship program established to meet the challenge of a crippling condition that disables some half million Americans, the society stated. The scholarships were made possible under the first of six $5,000 yearly grants from Alpha Chi Omega, national women's sorority. The first eight recipients are: Arline F. Bovee, Mukilteo, Wash., physical therapist at the Everett, Wash., Cerebral Palsy School; Miriam Bunce, Denver, physical therapist, Colorado Society for Crippled Children and Adults, Inc.; Dr. Harriet E. Gillette, Warm Springs, Ga., Fellow in Physical Medicine at Emory University, Atlanta, Ga.; Dr. Stanford F. Hartman, Phoenix, Ariz.; Bette Redwine, Albuquerque, N. M., physical therapist, Veterans Administration; Dr. Louis Spekter, Hartford, Conn., State Department of Health; Joan A. Schauble, Seattle, Wash., physical therapist and speech correctionist, and Harold Westlake, Ph.D., Wilmette, Ill.

World Health Organization.—As of June 15, a total of forty-three countries, including the United States, had formally joined the World Health Organization and several other nations were taking final steps toward ratification. President Truman, in signing the bill for United States membership, said, "The World Health Organization can help contribute substantially to the attainment of the healthy, vigorous citizenry which the world needs so badly today and tomorrow."

The first World Health Assembly convened June 24 at Geneva, Switzerland, with representatives of nearly all nations of the world in attendance. The delegates had before them for consideration the report of the Interim Commission work since 1946 with proposals for concentration on four main programs—malaria, tuberculosis, maternal and child health, and venereal diseases, in addition to suggested activity for 1949 in forty-four other medical, medicosocial, and related fields.

The Expert Committee on Malaria of the World Health Organization which met in Washington last May outlined methods to implement the program on malaria, which disease, the Interim Commission states, attacks 300,000,000 persons each year, of whom about 3,000,000 die. A maternal and child health section has been established to provide machinery for the international exchange of information on all phases of this subject. The Interim Commission states also that about 50,000,000 persons suffer each year from tuberculosis, of whom about 5,000,000 die. Cases of tuberculosis are increasing rapidly, it is said, in many parts of the world. The Interim Commission plans to place special emphasis on syphilis, giving governments assistance in national and local control. According to Dr. Brock Chisholm, Executive Secretary of the Interim Commission, the delegates to the first World Health Assembly had five weeks of hard work before them.

FOREIGN

Japan

Japanese Medical Journals.—Dr. Roscoe L. Sensenich, President of the American Medical Association, on his return from a recent official visit to Japan brought a copy of volume 1, no. 1 of THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION printed in the Japanese language, which contains translations of selected articles from THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION published in the United States. Authority to publish this Japanese journal was granted by the trustees of the American Medical Association. Dr. Sensenich brought back also volume 1, no. 1 of *The Japanese Medical Journal*, published in Tokyo bimonthly in English as the official organ of the National Institute of Health in Japan.

Health Reform in Japan.—The Japanese Diet passed early in July two additional modern health reforms, the Venereal Disease Prevention Law and the Preventive Vaccination Law. The Venereal Disease Prevention Law provides that all pregnant women are to have a health examination to determine the presence or absence of venereal disease and all persons entering into marriage are to obtain certificates showing that they are free from venereal disease. Compulsory examination may now be performed on persons in whom there is reasonable evidence to suspect venereal disease, but if they claim there is not reasonable evidence they may appeal to a court for withdrawal of the order for a venereal disease examination. The new law requires further that doctors give instruction to patients with venereal disease as to how to protect others from their diseases and also as to the treatment which they are to follow. Doctors must report to health authorities the names and addresses of contacts and of those patients who fail to follow instructions pertaining to treatment and preventive measures. The law requires that all such information obtained by physicians and health officials be kept confidential.

Until this law was passed, compulsory vaccination was required only for smallpox; it is now required also for typhoid, paratyphoid, whooping cough, tuberculosis, and diphtheria. According to Dr. Ira D. Hirschy of the Preventive Medicine Division, Supreme Command, American Forces in the Pacific, through the provisions of this law the public health standards for the Japanese people will be greatly improved.

CORRECTIONS

Diabetes.—In THE JOURNAL of July 24, page 1172, in the review of the book "Diabetes and the Diabetic in the Community," the primary purpose of the book was misstated. The author states in the preface that the book was written primarily for the teaching of the patient in the community rather than for the nursing of the patient in the hospital.

Acute Renal Insufficiency.—In the article entitled "Severe Acute Renal Insufficiency with Recovery" by Muirhead and Fromm in the August 14 JOURNAL, page 1378, the caption for figure 1 belongs to figure 4 and the caption for figure 4 belongs to figure 1. Also in the properly placed caption for figure 4 the term "unbroken line" is used twice. Actually here "unbroken line" represents blood urea (milligrams per hundred cubic centimeters) and "broken line" represents urine urea (grams).

Deaths

Charles Frederick Williams ● professor emeritus of psychiatry at the Medical College of the State of South Carolina, died at his home in Columbia, S. C., June 3, aged 72, of coronary occlusion. Dr. Williams was born in York County, S. C., Aug. 6, 1875. After graduation from the University of Maryland School of Medicine in Baltimore in 1899, he first practiced in York, and then, on March 4, 1901, became acting assistant surgeon in the U. S. Army, serving in Georgia and in the Philippines. On March 4, 1903, Dr. Williams resigned from the army, took postgraduate work in Baltimore; in July 1903, he began general practice in Columbia, where he served as city physician. He was secretary of the state board of health in 1907 and in 1908 became South Carolina's first state health officer, resigning in 1911 to take postgraduate work in Europe. In 1910 he was vice chairman of the Section on Preventive Medicine of the American Medical Association. Dr. Williams was a specialist certified by the American Board of Psychiatry and Neurology, past president of the Columbia Medical Society, South Carolina Hospital Association, American Psychiatric Association and South Carolina Conference on Social Work. He was one of the organizers and a director of the South Carolina Society for Mental Hygiene, a director of the Richland County Mental Hygiene Society and a director of the National Committee for Mental Hygiene. He was one of the organizers, a member of the executive committee and a director of the Columbia Chapter of the American Red Cross, and a delegate to the International Convention of Rotarians at Vienna, Austria, in 1931. In 1915, he was appointed a member of the board of regents of the South Carolina State Hospital, where he was superintendent from 1915 to 1945; he then resigned to become director of the hospital's research activities. In 1942 he became a trustee of the Ensor Research Foundation. The University of South Carolina conferred on him the degree of doctor of laws and awarded him the Algernon Sydney Sullivan Medal for unselfish service.

Philip Weatherly Huntington ● Colonel, U. S. Army, retired, Bradenton, Fla.; born in Connecticut Jan. 20, 1876; Columbian University Medical Department, Washington, D. C., 1898; Army Medical School in 1903, Medical Field Service School, advanced course, in 1927; entered the regular army as an assistant surgeon in 1902; promoted through the various grades to that of colonel in October 1928; served overseas during World War I and was awarded the Silver Star and Purple Heart; formerly commandant at the Army Medical School and Army Medical Center in Washington, D. C.; retired for age by operation of law Jan. 31, 1940; recalled to active duty and served during World War II; retirement changed to disability in line of duty Aug. 6, 1945; professor of military science and tactics at his alma mater; fellow of the American College of Surgeons; died May 12, aged 72, of heart disease.

Olga R. Povitzky, New York; born Dec. 25, 1877; Woman's Medical College of Pennsylvania, Philadelphia, 1901; for many years research bacteriologist with the New York City Department of Hospitals; during World War I served in France with the hospital unit of the New York Infirmary; member of the New York Academy of Medicine, the Woman's Medical Association, American Association of Immunologists; Society of American Bacteriologists and the American Public Health Association; formerly connected with bacteriologic research at Mount Sinai Hospital and the gynecologic and medical clinics of the New York Infirmary for Women and Children; died at Moores Mill, N. Y., May 21, aged 70, of leukemia, coronary thrombosis and diabetes mellitus.

Lewis George Allen ● Kansas City, Kan.; born in Lenexa, Kan., in 1891; University of Kansas School of Medicine, Kansas City, Kan., 1917; professor of clinical radiology at his alma mater; specialist certified by the American Board of Radiology; past president of the Radiological Society of North America, Kansas City Southwest Clinical Society, Wyandotte County Medical Society and the Kansas City Radiological Society; fellow of the American College of Physicians; chancellor of the American College of Radiology; member of the American Roentgen Ray Society; served during World War I; on the staffs of Bethany Hospital, St. Margaret's Hospital and Providence Hospital, where he died May 28, aged 57, of myelogenous leukemia.

William Joseph Leahy ● Ansonia, Conn.; born in Ansonia, Oct. 23, 1876; College of Physicians and Surgeons, Baltimore, 1899; member of the West Virginia State Medical Association; at one time practiced in Mannington, W. Va., where he was president of the Marion County Medical Society, health officer and president of the chamber of commerce; served in the medical corps of the U. S. Army during World War I; died in the New Haven (Conn.) Hospital May 31, aged 71, of cardiac infarct, pulmonary embolus and arteriosclerosis.

Achilles S. Abshire, Beckley, W. Va.; Baltimore Medical College, 1891; died in the Raleigh General Hospital May 30, aged 87, of heart disease.

Roy M. Armstrong, Franklin, Ky.; Hospital Medical College, Eclectic, Atlanta, 1911; member of the American Medical Association and the American Academy of Ophthalmology and Otolaryngology; fellow of the American College of Surgeons; specialist certified by the American Board of Otolaryngology; affiliated with St. Joseph and Good Samaritan hospitals in Lexington; died May 3, aged 64, of coronary occlusion.

Henry Barnes ● New Bedford, Mass.; Columbia University College of Physicians and Surgeons, New York, 1903; veteran of the Spanish-American War; on the courtesy staff of St. Luke's Hospital; chief of staff at Acushnet Hospital; died May 29, aged 70, of lymphosarcoma of the ileum.

William A. Boies, Knoxville, Tenn.; New York Homeopathic Medical College and Hospital, New York, 1896; member of the American Medical Association; affiliated with St. Mary's and Fort Sanders hospitals; died June 5, aged 77, of coronary thrombosis.

Raymond Bernard Benning ● Fort Recovery, Ohio; Northwestern University Medical School, Chicago, 1936; on the staff of the Gibbons Hospital, where he died May 21, aged 39, of coronary thrombosis.

John L. Bosworth ● Elkins, W. Va.; College of Physicians and Surgeons, Baltimore, 1889; an Affiliate Fellow of the American Medical Association; served as president of the board of education of the Huttonsville District, and as a member of the board of education of Randolph County for six years; died May 14, aged 91, of senility.

William K. Detwiller, Bellevue, Wash.; New York Homeopathic Medical College and Hospital, New York, 1893; died in the Virginia Mason Hospital, Seattle, May 12, aged 77, of coronary thrombosis.

Fred Eugene Earle, Weeks Mills, Maine; Medical School of Maine, Portland, 1900; member of the American Medical Association; died in China April 22, aged 76, of coronary thrombosis.

John Wesley Eckman Jr., Winchester, Ill.; College of Physicians and Surgeons, School of Medicine of the University of Illinois, 1908; affiliated with Passavant Memorial Hospital and Our Saviour's Hospital, in Jacksonville, where he died May 11, aged 66, of cirrhosis of the liver.

David Eilner, New York; Medico-Chirurgical College of Philadelphia, 1916; died March 10, aged 61, of cerebrovascular accident and arteriosclerosis.

Prewitt LaFayett Hagler, Birmingham, Ala.; Medical College of Alabama, Mobile, 1891; affiliated with the West End Branch of Baptist Hospital and the South Highland Infirmary; died in Jefferson Hospital May 3, aged 81, of uremia.

George B. Hamlin, Minneapolis; University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1896; member of the American Medical Association; served the faculty of his alma mater; affiliated with Maternity and St. Barnabas hospitals; died May 2, aged 77, of coronary disease.

Stuart Van Rensselaer Hooker, Seattle; Harvard Medical School, Boston, 1902; member of the American Medical Association; fellow of the American College of Surgeons; died May 20, aged 74, of coronary thrombosis.

Chester James Hurlbut, Lake Wales, Fla.; University of Vermont College of Medicine, Burlington, 1899; for many years superintendent of the Bartow General Hospital in Bartow; died May 3, aged 74, of diabetes mellitus and cerebral hemorrhage.

James Beauregard Jarvis, Laurel, Miss.; Memphis (Tenn.) Hospital Medical College, 1893; member of the American Medical Association; died May 31, aged 87, of heart disease.

Fred Johnson ● Eau Claire, Wis.; Wisconsin College of Physicians and Surgeons, 1904; died April 30, aged 76, of cerebral hemorrhage and arteriosclerosis.

Walter Gambol Johnson, Childress, Texas; University of Tennessee Medical Department, Nashville, 1900; died in Childress General Hospital May 17, aged 70, of cerebral hemorrhage.

William Arthur Jones, Morton, Miss.; Mississippi Medical College, Meridian, 1911; died May 2, aged 70, of arteriosclerosis.

Israel J. K. Light, Reading, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1899; member of the American Medical Association; died in the Good Samaritan

Hospital, Lebanon, April 23, aged 75, of malignant prostatic hypertrophy.

John Joseph Williams Looney ● Rocky Mount, N. C.; University of Virginia Department of Medicine, Charlottesville, 1909; went to the Mayo Clinic, Rochester, Minn., in September 1914 as an assistant in the department of ophthalmology and left the clinic in July 1918; on the staff of the Park View Hospital; died May 12, aged 68, of cerebral hemorrhage.

Raymond Stanley Love, Whiting, Kan.; Northwestern University Medical School, Chicago, 1909; died in Muscatine, Iowa, April 13, aged 64, of coronary thrombosis.

Henry Lubinsky ● Fall River, Mass.; Tufts College Medical School, Boston, 1927; medical examiner for a draft board during World War II; chief of pediatrics at Fall River General and St. Anne's hospitals; on the staff of Union Hospital; died May 25, aged 45, of cerebral hemorrhage.

Eugene Hartwell Luck ● Roanoke, Va.; Medical College of Virginia, Richmond, 1912; died in the Lewis-Gale Hospital May 10, aged 62, of cerebral hemorrhage.

Arthur Norton Mackey, Chicago; Medical College of Indiana, Indianapolis, 1891; died June 6, aged 80, of chronic myocarditis and arteriosclerosis.

Robert Morris Marshall, San Antonio, Texas; Colorado School of Medicine, Boulder, 1903; died May 1, aged 79, of cardiac decompensation.

John Wallace McCollom, Portland, Ore.; University of Oregon Medical School, Portland, 1908; member of the American Medical Association; served during World War I; affiliated with the Good Samaritan Hospital, where he died May 26, aged 62, of carcinoma.

Henry Garnsey McCormick, Laurel, Miss.; Rush Medical College, Chicago, 1891; member of the American Medical Association and the American College of Radiology; specialist certified by the American Board of Radiology; died May 23, aged 80, of cerebral hemorrhage.

John Edward McGuiggan, Chicago; Chicago College of Medicine and Surgery, 1915; member of the American Medical Association; served during World War I; affiliated with Evangelical Hospital and St. George's Hospital, where he died May 30, aged 56, of coronary thrombosis.

Charles M. McNaull ● Indianapolis; Bellevue Hospital Medical College, New York, 1891; on the staffs of the General, Methodist and St. Vincent's hospitals; died May 16, aged 84, of coronary occlusion.

George Harris Merryman ● Klamath Falls, Ore., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; affiliated with Hillside Hospital; died May 6, aged 69, of coronary heart disease.

William Glassell Miller Jr., Freeport, N. Y.; Long Island College Hospital, Brooklyn, 1908; also an attorney; formerly member of the Nassau County Mosquito Extermination Commission and director of the First National Bank; died May 27, aged 69, of coronary occlusion.

Robert Edward Alexander Milne, Le Roy, N. Y.; University of Toronto Faculty of Medicine, 1925; member of the American Medical Association; served as a member of the board of education; during World War II a major in the medical corps of the U. S. Army Air Forces in the Mediterranean theater; on the staff of the Genesee Memorial Hospital, Batavia; died in Strong Memorial Hospital, Rochester, May 4, aged 48, of carcinoma.

John George Mollath, White Plains, N. Y.; Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, 1891; died April 10, aged 80, of diabetes mellitus and arteriosclerosis.

Alexander Harris Moody, Dyersburg, Tenn.; Memphis (Tenn.) Hospital Medical College, 1903; served as county health physician; on the staff of the Baird Brewer Hospital; died May 9, aged 68, of carcinoma of the sigmoid colon.

Tarleton Flemming Moore, Hot Springs National Park, Ark.; University of Texas School of Medicine, Galveston, 1908; served overseas during World War I; formerly associated with the U. S. Public Health Service Reserve and with the Veterans Administration, having been in charge of its hospital in Alexandria, La., and on the staffs of various other administration hospitals; died May 28, aged 63, of carcinoma of the palate.

Frank Henry Mowe, Leominster, Mass.; Dartmouth Medical School, Hanover, N. H., 1888; died April 26, aged 84, of uremia.

Frank Leo Mozdy, Erie, Pa.; University of Cincinnati College of Medicine, 1936; served overseas during World War II; on the staffs of St. Vincent's and Hamot hospitals; died May 8, aged 40, of coronary thrombosis.

George L. Mueller, St. Louis; St. Louis College of Physicians and Surgeons, 1890; died in Barnes Hospital May 3, aged 79, of hypertensive cardiovascular renal disease.

Joseph Timothy Murphy ● Pottsville, Pa.; Jefferson Medical College of Philadelphia, 1913; attached to the 103rd Engineers with the rank of captain during World War I; one of the founders, staff member and a member of the hospital board of the Lemos B. Warne Hospital, where he died May 17, aged 58, of cerebral hemorrhage.

Max W. Myer ● St. Louis; Marion-Sims College of Medicine, St. Louis, 1899; member of the founders group of the American Board of Surgery; professor of surgery at the St. Louis University School of Medicine; fellow of the American College of Surgeons; served during World War I; affiliated with the Jewish Hospital; died in Clayton, Mo., May 16, aged 70, of heart disease.

Anthony F. Myers, Blooming Glen, Pa.; Missouri Medical College, St. Louis, 1885; member of the American Medical Association; for many years secretary of the Bucks County Medical Society; died in Grand View Hospital, Sellersville, May 6, aged 92, of hypostatic pneumonia and fracture of humerus received in a fall.

Thomas Francis Nolan, New York; Jefferson Medical College of Philadelphia, 1907; died May 27, aged 64, of cerebral hemorrhage.

Thomas Hillman Oliphant ● Corpus Christi, Texas; Tulane University of Louisiana School of Medicine, New Orleans, 1925; specialist certified by the American Board of Obstetrics and Gynecology, Inc.; died May 31, aged 47.

John Ransom Palmer, Shreveport, La.; Columbia University College of Physicians and Surgeons, New York, 1936; member of the American Medical Association and of the Medical Society of the State of New York; interned at St. Luke's Hospital in New York; served overseas during World War II; died in a hospital at Miami, Fla., May 2, aged 43.

John Dent Peabody, St. Petersburg, Fla.; Long Island College Hospital, Brooklyn, 1881; University of Pennsylvania Department of Medicine, Philadelphia, 1882; member of the American Medical Association; veteran of the Spanish-American War; served on the staff of the Mount Park Hospital; died May 30, aged 88, of pneumonia and arteriosclerosis.

Herbert Leroy Pettitt ● Morrison, Ill.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; formerly assistant health director of the state department of public health; died May 6, aged 72, of virus pneumonia and coronary occlusion.

Joseph Royal Phelps ● Medical Director, Captain, U. S. Navy, retired, Long Beach, Calif.; Harvard Medical School, Boston, 1903; entered the U. S. Navy on July 24, 1908; retired Feb 1, 1939 on own application after thirty years' service; died in the U. S. Naval Hospital May 8, aged 67, of ruptured aortic aneurysm due to arteriosclerosis.

Charles Bates Phillips ● Amsterdam, N. Y.; Albany (N. Y.) Medical College, 1908; past president of the Montgomery County Medical Society; affiliated with the Amsterdam City and St. Mary's hospitals; died May 11, aged 63, of carcinoma of the stomach.

John Ezra Phillips, Ewing, Ill.; St. Louis University School of Medicine, 1903; died May 8, aged 75, of heart disease.

Samuel Plahner, Milwaukee; Medizinische Fakultät der Universität Wien, Vienna, Austria, 1903; member of the American Medical Association and Central Neuropsychiatric Association; served on the staff of the Evangelical Deaconess Hospital; died in the Milwaukee Hospital May 8, aged 70, of acute gastrointestinal hemorrhage.

Rudolph M. Rau ● Frederick, Md.; College of Physicians and Surgeons, Baltimore, 1893; died May 26, aged 76, of cerebral hemorrhage.

John Augustus Riebel ● Columbus, Ohio; Ohio Medical University, Columbus, 1901; in 1940 received the honorary degree of doctor of laws from Capital University; on the staffs of Mercy Hospital and White Cross Hospital, where he died May 27, aged 78, of cerebral hemorrhage.

Rose Sylvia Rubin ● Philadelphia; Woman's Medical College of Pennsylvania, Philadelphia, 1910; served on the boards of education and health; on the staff of Mount Sinai and Women's hospitals; died May 16, aged 68, of carcinoma.

John Edward Ruisi ◑ Westerly, R. I.; Tufts College Medical School, Boston, 1917; fellow of the American College of Surgeons; medical officer for the U. S. Coast Guard since 1930;

served during World War I; member of the International College of Surgeons; consulting surgeon at the Homeopathic and St. Joseph's hospitals in Providence and South County Hospital, Wakefield; senior surgeon at Westerly Hospital; died May 27, aged 56, of carcinoma of the right kidney.

Nicholas Alexander Rumanceff, Brooklyn; University of Moscow Faculty of Medicine, Russia, 1899; since 1926 assistant pathologist at Kings County Hospital; died May 21, aged 73, of cerebral hemorrhage.

Arthur Jemmott Sayers, Yonkers, N. Y.; Howard University College of Medicine, Washington, D. C., 1929; served on the staff of the Lincoln Hospital in New York, where he died April 11, aged 54, of cerebral thrombosis.

August Henry Schade ● Toledo, Ohio; Toledo Medical College, 1908; for many years secretary-treasurer of the Ohio Society of Pathologists; charter member of the American Society of Clinical Pathologists; served during World War I; on the staff of the Robinwood Hospital; died May 15, aged 63, of pulmonary edema.

Joseph John Schill ● Pittsburgh; Western Pennsylvania Medical College, Pittsburgh, 1904; a medical examiner for draft boards during World wars I and II; on the courtesy staff of St. Francis Hospital, where he died May 8, aged 70, of arteriosclerotic heart disease.

Harry Leach Schurmeier ● Santa Barbara, Calif.; Northwestern University Medical School, Chicago, 1911; member of the American Association for the Surgery of Trauma; served in France during World War I; died May 11, aged 64, of coronary thrombosis.

Walter Edgar Scott, Adel, Iowa; Drake University College of Medicine, Des Moines, 1891; at one time on the faculty of his alma mater; member of the American Medical Association; served as a member of the board of education; died in Des Moines May 21, aged 83, of cardiac compensation.

Newton Loomis Sebastian, Pass Christian, Miss.; Tulane University of Louisiana School of Medicine, New Orleans, 1924; member of the American Medical Association and of the Louisiana State Medical Society; served in the U. S. Naval Reserve during World War II; died in the Memorial Hospital, Gulfport, May 7, aged 47, of uremia.

William Alvin Sickels ● South Milwaukee, Wis.; Detroit College of Medicine, 1896; served during World War I; died May 19, aged 77, of coronary occlusion.

Maurice L. Silbermann, New York; Medical College of Virginia, Richmond, 1911; member of the American Medical Association; died May 5, aged 65, of coronary thrombosis.

Caroline B. Skinner, St. Louis; Homeopathic Medical College of Missouri, St. Louis, 1897; for many years on the staff of Deaconess Hospital; died June 7, aged 90, of senility.

Lotus Mast Slabaugh, Nappanee, Ind.; Hahnemann Medical College and Hospital of Philadelphia, 1928; member of the American Medical Association; local health officer; affiliated with the Elkhart (Ind.) General Hospital, where he died May 21, aged 46, of coronary occlusion.

George Ritter Smith ● Seattle; John A. Creighton Medical College, Omaha, 1909; member of the Idaho State Medical Association and the American Psychiatric Association; at one time state director of public health in Idaho; formerly superintendent of Nevada State Hospital in Reno, and medical superintendent of the State Hospital, South, Blackfoot, Idaho; served as senior psychiatrist at the Northern State Hospital, Sedro Woolley, Wash.; died in Swedish Hospital May 15, aged 62, of aneurysm.

William Polson Smith, Columbus, Mont.; University of Illinois College of Medicine, Chicago, 1909; member of the American Medical Association and the International College of Surgeons; past president of the Montana State Medical Association and the Montana Public Health Association; served as a major in the medical corps of the Army of the United States during World War II; died in Beehive May 4, aged 66, of coronary occlusion.

Joseph Nelson St. Denis, Boston; Baltimore University School of Medicine, 1892; member of the American Medical Association; died May 20, aged 82, of arteriosclerosis.

Timothy Joseph Sullivan, Washington, D. C.; Georgetown University School of Medicine, Washington, 1904; died in St. Elizabeth's Hospital May 26, aged 74, of lobar pneumonia.

John Richardson Thompson, Bridgeport, Ill.; Hospital College of Medicine, Louisville, Ky., 1902; member of the American Medical Association; formerly county coroner; for many years member of the Illinois General Assembly; died May 14, aged 70, of coronary thrombosis.

John George Vaughan ● New York; Northwestern University Medical School, Chicago, 1907; studied at London School of Medicine; director of the Associated Mission Medical Office; formerly medical missionary in China; died in White Plains (N. Y.) Hospital, May 17, aged 70, of coronary thrombosis.

Calvin Albert Walker ● San Francisco; Cooper Medical College, San Francisco, 1905; fellow of the American College of Surgeons; served during World War I; past president of the Western Association of Industrial Physicians and Surgeons and vice president of the Congress of Railway Surgeons; chief surgeon for the Southern Pacific General Hospital; on the staff of St. Francis Hospital; died May 18, aged 73.

Clarence Kraus Weil ● Montgomery, Ala.; Columbia University College of Physicians and Surgeons, New York, 1923; specialist certified by the American Board of Internal Medicine; member of the American Association for the Study of Allergy; served during World Wars I and II; died May 5, aged 47, of coronary thrombosis.

Stephen Whitaker Wells, Liberty, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1896; member of the American Medical Association; formerly mayor, fire chief and coroner; died May 21, aged 72, of cerebral embolus and coronary occlusion.

Jacob Hial West, Champaign, Ill.; Cooper Medical College, San Francisco, 1894; died in the Memorial Hospital, Springfield, May 1, aged 81.

Edward Claude Westaver, St. Louis; St. Louis College of Physicians and Surgeons, 1918; died May 20, aged 66, of cerebral hemorrhage.

Frank Robert Wheelock ● Scranton, Pa.; Harvard Medical School, Boston, 1905; member of the American College of Chest Physicians; served as director of public health; veteran of the Spanish-American War; received decorations from the French and U. S. governments for service during World War I; formerly medical director of Lackawanna County Tuberculosis Hospital; died May 12, aged 69.

Walter Burleigh Whipple, Peoria, Ill.; Chicago College of Medicine and Surgery, Chicago, 1904; died in the Proctor Hospital April 25, aged 65.

William G. White, Centralia, Mo.; St. Louis College of Physicians and Surgeons, 1892; Barnes Medical College, St. Louis, 1896; served overseas during World War I; died in Audrain County Hospital, Mexico, May 1, aged 79, of arteriosclerosis.

Spencer Draper Whiting, Scottsdale, Ariz.; Boston University School of Medicine, 1905; member of the American Medical Association; served during World War I; formerly associated with the Indian Service; certified by the National Board of Medical Examiners; died in the Veterans Administration Hospital April 29, aged 68, of lung abscess and subacute bacterial endocarditis.

Earl Willbre Williamson, Evanston, Ill.; University of Illinois College of Medicine, Chicago, 1919; assistant director of the American College of Surgeons; member of the advisory council to the program on hospital administration at Northwestern University; died May 10, enroute home from a medical meeting, aged 62, of heart disease.

William Edward Wilmerding ● Lieutenant Colonel, U. S. Army, retired, Skyland, N. C.; University of the South Medical Department, Sewanee, Tenn., 1899; Medical Field Service School in 1921 and School of Aviation Medicine in 1923; entered the medical corps of the U. S. Army as major in July 1920; retired Feb. 28, 1938; served during World War I; died in Washington, D. C., May 8, aged 74, of benign hypertrophy of the prostate and hydronephrosis.

Walter Scott Wilson, Savannah, Ga.; Johns Hopkins University School of Medicine, Baltimore, 1904; member of the American Medical Association; served on the local board of education; died May 27, aged 90, of myocardial failure.

William Emanuel Yount, Cape Girardeau, Mo.; Vanderbilt University School of Medicine, Nashville, Tenn., 1898; specialist certified by the American Board of Ophthalmology; member of the American Medical Association; died April 6, aged 74, of coronary disease.

Ross Luverne Zimmerman ● Detroit; Detroit College of Medicine and Surgery, 1915; died in Mount Carmel Mercy Hospital May 23, aged 62, of cerebral thrombosis.

George Guido Zohrlaut, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; member of the American Medical Association; died June 9, aged 69, of carcinoma of the bladder.

Foreign Letters

LONDON

(From Our Regular Correspondent)

July 24, 1948.

Difficulties of the National Health Service

Mr. Bevan, the socialist Minister of Health, has said that his object is to take money out of the doctor-patient relation, so that the poorest can obtain without payment all the medical attention that he requires, including that of the highest specialist. But difficulties have already arisen in the attainment of this deal. In the House of Commons a socialist member complained that a minority of physicians were creating a medical black market in order to obtain more money at the expense of the community. They were refusing to take on their lists persons believed to be sufficiently well off to pay high fees. Worse than this, there were physicians who refused patients because they needed extra attention. The old, the sick and the children were refused for this reason. In 1 case a man was taken but his wife was refused because she had cancer. In a more subtle form the refusal was not outright. The physician said "I will take you if you wish, but you will not get the same attention as you used to. I cannot give you the same as the paying patients, and you must come to the side entrance like the tradesmen."

In reply the Minister of Health said that the practices described were carried on by a small minority of the physicians. The vast majority were playing the game. The transition on July 5 was carried out with remarkable smoothness, impossible in any other country. A physician's selection of some members of a family and refusing another because he was a sick man was reprehensible and cut across the conception of the family doctor. The scales of remuneration for the profession were drawn up on the assumption that all the population might be in the scheme. So generous were the standards of remuneration that 99 per cent of the population would have lower incomes than the general practitioners. Where doctors were saying that a potential patient could afford to pay they were in most cases saying it to persons whose incomes were less than their own. Certain sanctions could be applied. Areas where physicians said that they were unable to take patients on their lists but insisted on their remaining private patients should be regarded as underdoctored. This means that the government could use inducements to settlements of physicians in that area. Further, it was obligatory on the physician to provide adequate facilities for his patients and it was not proper for him to provide superior facilities for his private as against his public patients.

The Minister is correct in his boast that the transition from private to socialist practice of medicine has been carried out with remarkable smoothness. But it has to be remembered the latter already existed in the panel system, which applied to the majority of wage earners but not to their wives and children or to those whose incomes were above a certain level. Also the transition has been at a time when illness is at a minimum. The test of the new system will come with the colder weather and the epidemics, from which we are usually free at this time of year.

Surgery Versus Radiotherapy in Carcinoma of the Cervix

At the Edinburgh Obstetrical Society Mr. Charles Read opened a discussion on the relative merits of surgery and radiotherapy in carcinoma of the cervix. He said that there was a division of opinion in regard to stages 1 and 2 but little debate in respect to stages 3 and 4, which were generally unsuitable for surgery. In many clinics the Wertheim operation was abandoned when radiotherapy was generally established, but at the Chelsea Hospital for Women it had been performed continuously since Mr. Bonney introduced it in 1907. Even the surgical enthusiast had to admit that the results of radiotherapy compared favorably with those of surgery, but the question might be raised whether some of the fatalities after radiotherapy could be avoided by judicious surgery. Mr. Read suggested that there were seven indications for surgery in carcinoma of the cervix: (1) radioresistant growths proved either clinically or cytologically; (2) columnar-celled carcinoma; (3) vaginal vault stenosis; (4) the presence in addition of large fibroids or ovarian cysts; (5) associated salpingitis; (6) refusal of irradiation by the patient, and (7) pregnancy in the presence of cervical carcinoma. Considering the Wertheim operation after previous irradiation, Mr. Read expressed the opinion that although this did increase the technical difficulties the operation was justifiable in radioresistant cases, experience at the Chelsea Hospital showing a five year survival rate of 44.4 per cent in 34 stage 1 and 20 stage 2 growths.

Games for the Paralyzed

Since the war rehabilitation of the disabled has received much attention in this country. At the Ministry of Pensions Hospital, established for this purpose, a remarkable demonstration of what can be done for those suffering from spinal paralysis has been given by an archery tournament between two teams, who shot their arrows with surprising accuracy. Mr. H. A. Marquand, the Minister of Pensions, was present and said that his department was striving to bring the pensioner back as far as was possible into the normal life of the community. He was pleased to say that more than 80 per cent were employed.

Dr. L. Guttman, director of the head and spinal injuries section of the hospital, stated that it had been proved beyond doubt that many games, such as darts, billiards, snooker, skittles, badminton, net ball and even polo, can be adjusted to the disability of paralyzed persons, enabling them to compete successfully with normal persons. He had chosen archery as the most suitable sport, with the possible exception of swimming, for the paralyzed, because it had great therapeutic value.

DENMARK

(From Our Regular Correspondent)

COPENHAGEN, June 9, 1948.

The Wartime Behavior of Graves's Disease

A recent investigation by Dr. Kurt Iversen (Rosenkilde and Bagger, 1948) has brought out some curious facts concerning the behavior of Graves's disease in Denmark during the German occupation. There had been a fairly uniform rise in the incidence of this disease since 1931, but it was not till 1942 that this rise became really striking. Dr. Iversen's material consists of 2,802 patients with recently diagnosed disease admitted to the municipal hospitals of Copenhagen between the beginning of 1938 and the end of 1945. The rise in the period 1941 to 1944, inclusive, was followed by a decided fall in 1945, and the rise cannot, apparently, be explained away by reference to the growth of population, an increase in the hospital admission rate or more accurate diagnoses in the period under review.

It is, of course, tempting to associate this rise in the frequency of Graves's disease with the nervous strain entailed by the German occupation. But Dr. Iversen finds that psychic trauma could be held responsible for the onset of the disease in barely 5 per cent if one is to be guided by hospital records. Besides, it was not till 1944 and 1945 that the Danish reaction to the Germans assumed violent proportions, and by then the rise in Graves's disease had already culminated. It is also curious in this connection that in German-occupied Norway a rise in the frequency of Graves's disease in 1941 was followed by a definite fall in 1942 and the succeeding years in spite of the growing violence of the Norwegian opposition to the Germans. Then

again, in the period 1939 to 1945, there was a definite decline in the incidence of Graves's disease in German-occupied Holland and Belgium. Dr. Iversen suggests that the key to this problem may possibly be found in the lack of certain elements in the wartime dietary of Denmark, whose supply of margarine derived from the soya bean was cut off in 1941. The bitter cold of the wartime winters may also have played a part, but Dr. Iversen is wisely and cautiously tentative in his correlation of possible causes with effects.

Epidemic Diseases in Denmark in 1947

The returns published by the Danish public health authorities concerning the incidence of the epidemic diseases from year to year make stimulating reading, for in many instances they suggest questions instead of supplying answers. Let us take the incidence of some of these diseases in 1947 and compare it with the "normal," i. e., the average for several years up to 1940. And then let us ask ourselves to explain the decided difference in many cases between the two figures.

	1947	"Normal"
Typhoid	84	40
Epidemic cerebrospinal meningitis	422	65
Diphtheria	413	1,350
Scariatina	5,138	9,000
Puerperal fever	108	240
Measles	21,230	2,700
Mumps	28,602	3,050
Angina tonsillaris	137,256	95,000
Bronchopneumonia	34,089	22,500
Croupous pneumonia	6,409	3,700
Acute infectious gastroenteritis	29,978	25,000
Acute epidemic hepatitis	9,132	2,500
Gonorrhea	15,267	8,250
Acquired syphilis	2,301	515

Note that the "normal" for the venereal diseases refers only to 1940 and not to any previous years.

This table might well figure in an examination paper set for senior medical students asked to explain in each case why the figure for 1947 differs so greatly from the "normal." The answer in the case of gonorrhea and syphilis is easy and monosyllabic—war. Perhaps the same answer is valid for typhoid. But what of the gigantic rise in the incidence of mumps and acute epidemic hepatitis? And can we flatter ourselves that the decline in the diphtheria rate reflects the success of our vaccination against it? The examinee who can explain the rise or fall of the disease in every case must be a happy blend of Hippocrates and Baron Munchausen.

Hospital Accommodation for the Aged Sick

In 1942 Professor Meulengracht drew attention to the overcrowding of the general hospitals with the aged sick, and now Dr. H. G. Davidsen has returned to the charge with a statistical analysis of the age distribution of the patients treated in the medical department of a certain Danish hospital. For, be it noted, it is the medical rather than the surgical side of a general hospital which suffers in this respect. Dr. Davidsen's analysis of the years 1930 and 1945 shows that in the interval between these two years the average duration of stay in hospital per patient has been shortened considerably, and this phenomenon is most obvious in the case of young patients, probably, and to a large extent, because of the effectiveness of the sulfonamide group of drugs. This brisk circulation of comparatively young patients means that three or four of them can be treated for every elderly patient. While the cost per bed per day on the medical side of a general hospital is kr. 25, it is only kr. 9.60 in public hostels for the aged.

Dr. Davidsen asks in effect: What good does twenty-five days' sojourn in a costly general hospital do for the aged infirm who need prolonged care not necessarily entailing the costly equipment and staffing of a general hospital? Dr. Davidsen shows that between 1930 and 1945 the number of persons over the age of 65 in Copenhagen rose from 43,000 to 62,000, and even when account is taken of the general rise of the population in the same period, this rise in the number of the aged is impressive. He calculates that the need for institutional treatment for the aged will continue to rise till 1980 at any rate. He has set himself three aims: (1) to relieve the congestion of the general hospitals; (2) to provide the aged with medical care and nursing of good quality, and (3) to do so without waste of public funds.

BRAZIL

(From Our Regular Correspondent)

RIO DE JANEIRO, July 25, 1948.

Oral BCG Vaccination of Newborn Infants

Dr. Arlindo de Assis has published a report on the work of the Ataulpho de Paiva Tuberculosis Foundation during 1947, when 20,516 newborn infants were vaccinated on the fourth to the tenth day of life with a single dose of 100 mg. of BCG by mouth. The immunization by this method was as well tolerated as the former system of giving three doses of 30 mg. on alternate days to every infant. From the point of view of mass vaccination of newborn infants the single dose method is clearly more advantageous than the former one. The BCG vaccine used was prepared with 14 day old pellicle growths and the fluid employed was the Sauton diluted to one-fourth strength and carefully adjusted to p_H 7.2. The concentration of BCG in the vaccine was 20 mg. per cubic centimeter, the vaccine having been stored at 4 C. for no longer than ten days after its preparation. To determine the first appearance of tuberculin reactivity of vaccinated children living in nontuberculous households, a sample of 2,028 infants was tested intradermally with 1 mg. and 10 mg. of old tuberculin. Reactions were considered positive only if the indurations reached more than 4 mm. in diameter after forty-eight hours. About 60 per cent of reactors were observed between the fourth and the sixth week of life of the vaccinated. The Negro infants were more particularly able to become tuberculin positive than the white. Starting from the seventh week of life an increasingly larger proportion of reactors was found. Dr. Assis expressed the belief that the single dose method of immunizing newborn infants may represent a decided step toward a final extensive program of tuberculosis prevention.

A New Culture Medium for Trypanosoma Cruzi

Drs. Gilberto de Freitas and Firmino T. Castro, of the Oswaldo Cruz Institute, Rio de Janeiro, succeeded in the preparation of a culture medium for the causative agent of American trypanosomiasis that represents a decided improvement. Starting from the hypothesis that the blood components which are responsible for the growth of flagellates in culture mediums are not proteins but less complex substances, Freitas and Castro tried the enzymatic hydrolysis of total blood, aiming at the definitive elimination of any material that may be precipitated, as well as the elimination of any growth factor eventually connected with the protein molecule. They were able to prepare a culture medium free from cells and particles and of coagulable proteins and permitting the sterilization by autoclave. Twenty-five successive subcultures were obtained without any sign of decrease of the multiplication capacity of the organism. Some preliminary counts revealed 8,000,000 organisms per cubic centimeter in tubes with 4 cc. of medium and inoculated with 25 per cent of a culture. With larger inoculums about 12,000,000 organisms per cubic centimeter can be obtained in flasks with 100 cc. of medium. The culture can be made in tubes for conservation of the samples, or in Erlenmayer flasks for large scale production.

Personal

Dr. Achilles de Araujo was appointed professor of orthopedy and traumatology at the University of Rio de Janeiro.—Dr. Josias de Freitas was appointed assistant professor of surgery at the University of Rio de Janeiro.

Medical Economics

THE ISSUE OF COMPULSORY HEALTH INSURANCE [1]

A Review by Frank G. Dickinson, Ph.D., Director, Bureau of Medical Economic Research

When a physician with wide experience in health matters and an eminent student of governmental administration undertake, under the auspices of an outstanding research organization, the task of advising a committe of the United States Senate on two proposals for medical care of the people, an important contribution to medical economics can be expected. This is what George W. Bachman, M.D., Lewis Meriam, Ph.D. and the Brookings Institution have accomplished in a large measure.

In May 1947 the Brookings Institution undertook a study of compulsory health insurance at the request of Senator H. A. Smith, chairman of the subcommittee on health of the Senate Committee on Labor and Public Welfare. Two major proposals for national participation in the provision of individual medical care were before the committee. The first of these proposed federal grants-in-aid to the states to assure adequate medical care for the indigent and medically indigent. The second proposal was for the establishment of a compulsory health insurance system by the national government, with federal regulation and control of the providers of medical services. The Brookings report includes a study of the economic, social and administrative issues involved in the plans; an examination, appraisal and analysis of statistical data bearing on those issues; a discussion of questions which cannot be answered precisely by factual evidence, and a set of conclusions and recommendations given the Committee.

The first major issue considered in the report is the health of the American people. Evidence from prewar mortality statistics discloses a substantial reduction in the past forty years in death rates from typhoid, diphtheria, tuberculosis, infant diseases and childbirth. These reductions are attributed to a combination of medical care, public health work and popular education and "do not suggest basic defects in the American system." International and interstate comparisons lead to the conclusion that, although forty years ago the United States was far behind the world leaders, the health of its white population is now probably better than that of any other great nation. The few countries with generally lower mortality rates are equalled by several of our states with larger populations. Mortality figures also show that nonwhites in the United States have materially poorer health than the whites, but the evidence indicates that this is due more to economic, social and culural conditions than to inadequate medical care. Despite the claims of critics of the American system of medical care, selective service data do not contradict the conclusions drawn from mortality records. A critical analysis of draft statistics in the report shows them to be unreliable as a measure of national health or of the medical needs of the country.

Statistics on illness and medical care are taken from the survey by the Committee on the Costs of Medical Care in 1928 to 1931 and the National Health Survey of 1935-1936. Both studies locate the chief difficulty in the provision of medical care among the low income groups and, within these groups, among children under 15 and aged persons. Although they permitted wide differences in interpretation, the surveys "did not, however, seem to disclose large volumes of serious illnesses that did not receive medical care." An examination of income and expenditure figures for 1941 reveals that for all classes with incomes above $1,000, expenditures for automobiles exceeded those for medical care. From such data the Institution concludes that the large majority of American families have capacity to pay for adequate medical care if they are willing to give it a priority above that for certain nonessential or luxury items. Moreover, many of those now unable to pay for adequate medical care would have to be provided for by philanthropic or public funds under compulsory health insurance because they would be unable to pay the required premiums.

The Brookings report recognizes the limitations of county physician–population and hospital bed–population ratios as indexes of the adequacy of medical service in rural areas. Residents of areas with low ratios may receive medical care from physicians and hospitals in neighboring counties. An attempt now being made to define "medical service areas" and "medical service centers" similar to the trading areas and centers used for commercial purposes promises a clearer picture of the medical care services actually available to the population of a given area.

With reference to the over-all supply of physicians, the report considers it probably sufficient to meet present consumer demand but inadequate to meet all the medical needs of the American people. The report estimates a shortage of about 50,000 dentists at the present time and predicts that the nursing shortage may be as great as 130,000 by 1950. Basing estimates on standards for bed occupancy and capacity set by hospital authorities, some 207,539 additional beds are needed for general and mental hospitals and tuberculosis sanatoriums. Adding the 25 per cent of the 1,468,714 beds now available which are considered obsolete by the United States Public Health Service, a total of 559,128 additional beds would be necessary to meet the hospitalization needs of the American people. These figures lead to the conclusion that the adoption of compulsory health insurance would not immediately make adequate medical care available to all, because the supply of trained personnel and facilities would be insufficient to meet the demand.

Although the Brookings study makes no original estimate of the costs of compulsory health insurance, it cites several factors which would tend to increase medical care expenditures. Insured persons could be expected to make unnecessary demands on the medical care services; some practitioners and agencies would attempt to use the system for their own financial advantage, and administrative expenses would be heavy. If payment is on a fee for service basis, thousands of government employees would be needed to check, audit and investigate claims. If a per capita method is used, the government must allocate each insured person to a general practitioner and must investigate complaints by patients, with perhaps a hearing, decision, penalty and enforcement. A salary system would involve all the problems of government personnel administration, including appointment and promotion, fixing of salary, hours and leaves and disciplinary action.

Experienced members of the Brookings Institution staff have considered the administrative aspects of compulsory health insurance and its effect on practitioners and on the quality of medical service. The conclusions drawn from discussions of these questions are that compulsory health insurance would necessitate a high degree of governmental regulation and control over personnel and agencies providing medical care; that it is improbable that politics could be eliminated from medical care supplied under a governmental system; that the injection of the government into the relationship between practitioner and patient might impair the quality of medical care and that difficulties in the administration of a fee for service system would probably result in the adoption of the more highly socialized per capita or salary system. "It seems questionable whether a country which once embarks on compulsory insurance can turn back but must attempt to remedy defects by more complete government control and administration."

The recommendations in the Brookings report are reminiscent of the majority opinion of the Committee on the Costs of Medical Care. In the judgment of the Institution it would be wise to leave to the individual states the question of compulsory health insurance and to permit each community to make its own arrangements for the provision of medical care. Experimentation would probably lead to a diversity of plans in different sections; if a single pattern were to develop it could then be adopted on a national basis. The Institution recommends that at present the national and state governments might well confine their activities to (*a*) research and developments in the field of public health, (*b*) health education at the school level, (*c*) teaching of preventive medicine, (*d*) assisting

1. Bachman, G. W., and Meriam, Lewis: The Issue of Compulsory Health Insurance, Washington, D. C., the Brookings Institution, 1948, pp. 271.

in the acquisition of facilities and the training of personnel and (*e*) providing care for the indigent and medically indigent. Adult educational campaigns should be left to voluntary organizations which have enlisted the cooperation of leading laymen. "It must be remembered that good health is not exclusively a matter of medical care; it also impinges upon causative factors that are nonmedical, such as food, shelter, vice and crime, transportation, and industry. Its maintenance depends also upon the intelligence, interest, and co-operation of individuals, families and local communities."

In order that the Brookings report might be of use to the Senate Committee, it had to be prepared in less than a year. Had time permitted, the Institution might have been able better to organize its material and to include more recent statistical data. However, the progressive trend in American medical care is clear; current data would undoubtedly reinforce the conclusions drawn from the study. The discussions of questions not subject to objective answers are well thought out, especially those relating to the administrative problems involved in compulsory health insurance. Insight into such problems gained in previous studies of government and its administration has enabled the Institution and its staff to foresee many of the pitfalls conveniently overlooked by proponents of compulsory health insurance. Certainly the Brookings report throws considerably more light on the practical issues of compulsory health insurance than do the polemic or idealistic contentions of its supporters.

The organization and some of the material reveal haste in preparation. This was forced on the authors, as the book was printed less than twelve months after the request to write it was made in May 1947. Considering the short time available, the volume is well organized and the materials are well selected. The data on medical economics are abundant, but the quality of much of the data is inferior. The authors could have been more discriminating in their appraisal of data on family expenditures for medical care (pp. 181-190). It has been proved that these expenditures are higher percentages of the budgets of the low income family (excluding from consideration both extremes in family income distributions). It has been demonstrated that from birth to death medical needs are described by a U-shaped curve. For males this curve descends rapidly from infancy through adolescence and middle age and rises rapidly later after about age 60. For females the curve is about the same except that it rises during the child-bearing period and is generally higher between infancy and old age. The authors fail to recognize that the age and sex distribution must be the same in all families in each income class in any sample before one can conclude that, within limits, medical care expenditures are not a constant percentage of family income. These U-shaped curves for both sexes strongly suggest that young parents with young children experience the maximum medical needs.

The young fathers in their twenties or thirties have not reached their maximum earning years, for that also follows a curve—an age-earnings progression. The maximum portion of the family budget spent for medical care as the family passes through time is likely to occur when the medical care demand curves are high and when the breadwinner is still on his way up the age-earnings curve. Hence data on portions of family budgets spent for medical care seem to prove that high income families are favored. The authors, who were otherwise discriminating in their use of data, failed to note that such figures may merely show that the peak years of medical expense coincide with the years of low earnings for the young family. The business cycle behavior of medical care expenditures suggests that medical care is both a necessity and a luxury; apparently some of the expenditures for medical care are of the luxury type. These data and a considerable portion of the other standard data used by the authors require extreme caution for proper interpretation.

The contribution of this volume is somewhat greater on the side of administration than on the side of analysis of statistical information. Nowhere has there been a clearer insight into the administrative difficulties with which a program of federal compulsory sickness insurance would be fraught. The relationship of physician to patient would confront governmental agencies with administrative problems of a different order from those created by any previous exercise of the police power of government. Your reviewer believes that the authors' analysis of administrative problems posed by the two proposals which they were commissioned to examine constitutes their lasting and great contribution to the literature of medical economics.

THE HEALTH OF LOW-INCOME FARM FAMILIES IN SOUTHEAST MISSOURI[1]

In 1941 a study of the health of the farm families in Southeast Missouri was made by physicians and dentists under the direction of the medical advisor of the Farm Security Administration. Only those who borrowed funds from the Farm Security Administration were examined. This group included 4,124 persons. Among them, males and females were divided almost evenly, while Negroes represented one third of the group.

The physicians and the dentists found a total of 14,700 defects and diseases among all persons examined, which is an average of 3.8 defects per person. Only 5 per cent were without detectable defects. The most common type of disease was that of the respiratory system, causing one third of the defects. Diseases of the genitourinary system accounted for one sixth of the defects diagnosed, and the diseases of nutrition and endocrine glands also caused one sixth of the defects. There was much need for dental care, and one half of the population needed fillings in their teeth.

Considering the age of the population examined, the older persons had more diseases than the young, and the majority of the population were young since they married at an early age and the birth rate was high. The average number of defects increased from 1.5 for children under 5 years of age to 6.3 for persons 45 years and over. Diseases of the older group include diseases of the circulatory, digestive and nervous systems, while the diseases of the younger group mainly involved tonsils and adenoids.

Women had a larger number of defects than the men, especially in the case of diseases of the genitourinary system. This was also true for diseases of the circulatory system. The most predominant diseases in men were those of the digestive system.

Negroes were reported with about the same number of cases as white persons except when the families were considered as a whole. When this was the case, they exceeded the white persons mainly because the Negro families consisted of more children. The most prevalent diseases among the Negroes were those of nutrition and the endocrine glands. Anemia was twice as frequent in Negroes as it was in white persons.

After the study was completed, the physicians and dentists made recommendations as to the care that should be given. There were 8,595 recommendations made in all, which gave an average of about 2 for each person. Only one tenth did not require recommendation, and this fraction consisted mainly of children. Dental care was the major recommendation, 34 per cent, and next in line was the recommendation for surgical treatment, 24 per cent. Dental care included cleaning of teeth, teeth extractions and fillings. About 95 per cent of the operations necessary were appendectomies, adenoidectomies and circumcisions. The eyesight of these people was not too poor, and only 6 per cent of the recommendations were made for these corrections. At least 1 member in every family, except 1, needed some medical attention. There were 843 families, and there were about 4 or more recommendations made for 95 per cent of the families.

These farm laborers and renters are in the low income bracket and as a result spend little money for their health. Some are medically indigent, although the authors present no analysis of family expenditures. Even if these people could and would spend the money, the facilities available are not adequate to meet all the needs for the group in this territory. The authors stress need, not demand, for medical care; demand

1. The Health of Low-Income Farm Families in Southeast Missouri, University of Missouri, College of Agriculture, Agricultural Experiment Station, E. A. Trowbridge, Director. August 1947, Research Bulletin 410.

comprises desire plus the willingness and ability to pay. These results indicate that better health facilities are required for these people as well as other groups in the same circumstances if all the needs are to be met. Increased facilities could not, of course, provide more medical care unless demand increased. The authors considered the question of financing the program outside the scope of their study.

[*Comment*: Interesting would be comparison with a similar group in an industrial area. One wonders as to the criteria that determined the need for operations on the appendix that had been delayed or neglected.—ED.]

Council on Medical Education and Hospitals

GRADUATE TRAINING PROGRAMS ACCEPTABLE BY THE AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY

The Council on Medical Education and Hospitals has limited its approval of programs for graduate training to those offered in connection with general or special hospitals. The following information is published however, at the request of the American Board of Psychiatry and Neurology to indicate the availability of a special type of training which is acceptable to the board and carries full credit toward certification by that board.

Requirements for Acceptance

In order to facilitate the arrangements for training in child psychiatry (which constitutes a major aspect of modern psychiatry), the American Board of Psychiatry and Neurology will accept one year of training in psychiatric clinics for children which may or may not be a part of a hospital approved for residency training, provided such a clinic gives adequate supervision and instruction for full time training during the entire third year of the required three year formal training period. For the purpose of evaluating such clinics, the following conditions and criteria are deemed essential by the American Board of Psychiatry and Neurology:

1. That the clinic have a full time medical director, psychologist, and social worker qualified by training and experience in child psychiatry and allied fields to supervise the training of residents.

2. That the major portion of such training be devoted to therapy adequately supervised by this qualified staff.

3. That the service and teaching activities of the clinic be integrated with those of the community and its social agencies.

4. That clinic work be supplemented by seminars, case conferences, journal clubs or other opportunities for the discussion of the basic principles involved in outpatient work with children and parents, teacher, public health and welfare agency personnel.

5. That such a training clinic be well established in the community with a qualified staff that has operated together long enough as a team to insure stable and sound functioning.

6. That the senior members of the clinic team show evidence of previous experience in the teaching of psychiatry in general, child psychiatry in particular, and their allied fields.

These criteria set forth by the Board pertain more particularly to community-sponsored clinics offering full time training in child psychiatry during the third year of formal residency training. If these clinics are affiliated with hospitals already maintaining approved programs, separate approval is not required unless warranted on the basis of their meeting all requirements for straight fellowship training in child psychiatry.

The following clinics are acceptable to the American Board of Psychiatry and Neurology as qualifying under these provisions.

Center	Director
Children's Psychiatric Division, Langley Porter Clinic, San Francisco	Dr. Stanislaus Szurek
Bureau of Mental Hygiene, 1179 Main St., Hartford, Conn.	Dr. James M. Cunningham
Louisville Mental Hygiene Clinic and Child Study School, 610 South Floyd Street, Louisville, Ky.	Dr. Spafford Ackerly
The Guidance Center, 1737 Prytania St., New Orleans	Dr. Milton E. Kirkpatrick
The Psychiatric Clinic of the Mental Hygiene Society of Maryland, Baltimore	Dr. H. Whitman Newell
Children's Center, 244 Townsend St., Roxbury, Mass.	Dr. Marian Putnam and Mrs. Beata Rank, co-directors
Judge Baker Guidance Center, 38 Beacon St., Boston	Dr. George E. Gardner
Amherst H. Wilder Clinic, 279 Rice St., St. Paul	Dr. Hyman S. Lippman
Central Clinic, Cincinnati General Hospital, Cincinnati	Dr. Maurice Levine
Child Guidance Clinic, 1711 Fitzwater St., Philadelphia 46	Dr. Frederick H. Allen
Pittsburgh Child Guidance Clinic, 3004 Victoria St., Pittsburgh 13	Dr. Harry M. Little
Children's Service Center of Wyoming Valley, 335 South Franklin St., Wilkes-Barre, Pa.	Dr. J. Franklin Robinson

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various Centers, Jan. 21, 1949. Final date for filing application is Oct. 1. *Oral,* Philadelphia, Oct. 10. Sec., Dr. Paul M. Wood, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF OPHTHALMOLOGY: *Oral.* Chicago, Oct. 6. *Written.* Various Centers, January 1949. Sec., Dr. S. J. Beach, 56 Ivie Rd., Cape Cottage, Maine.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Chicago, Oct. 5-8. New York City, Spring, 1949. Sec., Dr. D. M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: Chicago, Oct. 8-9. Final date for filing application is Oct. 1. Sec., Dr. Robert A. Moore, 507 Euclid Ave., St. Louis.

AMERICAN BOARD OF RADIOLOGY: Nov. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

BOARDS OF MEDICAL EXAMINERS

ALASKA: * *Examination.* Juneau, Sept. 7. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARKANSAS: *Eclectic Examination.* Little Rock, Nov. 4. Sec., Dr. C. H. Young, 1415 Main St., Little Rock.

CALIFORNIA: *Oral.* Los Angeles, Nov. 20-21. *Written.* Sacramento, Oct. 18-21. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

COLORADO: * *Endorsement.* Oct. 5. Final date for filing applications is Sept. 18. Sec. Walter W. King, 831 Republic Bldg., Denver 2.

CONNECTICUT: * *Examination.* Hartford, Nov. 9-10. Sec., Dr. Creighton Barker, 258 Church St., New Haven.

CONNECTICUT: * *Homeopathic.* Nov. 9-10. Sec., Dr. Joseph H. Evans, 1488 Chapel St., New Haven.

DISTRICT OF COLUMBIA: * *Reciprocity.* Washington, Sept. 13. Sec., Commission on Licensure, Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.

GEORGIA: *Examination.* Atlanta, Oct. 12-13. *Endorsement.* Atlanta, Oct. 14. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

ILLINOIS: Chicago, Oct. 5-7. Supt., Dept. of Registration and Education, Mr. Fred W. Roegg, Capitol Bldg., Springfield.

INDIANA: *Examination.* Indianapolis, June 1949. Sec., Board of Medical Registration & Examination, Dr. Paul R. Tindall, 416 K. of P. Bldg., Indianapolis.

KANSAS: Topeka, Dec. 15-16. Sec., Board of Medical Registration & Examination, Dr. J. F. Hassig, 905 N. 7th St., Kansas City.

MAINE: Portland, Nov. 9-10. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, Dec. 14-17. *Endorsement.* At the discretion of the Board. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore.

MINNESOTA: Minneapolis, Oct. 19-21. Sec., Dr. J. F. DuBois, 230 Lowry Medical Arts Bldg., St. Paul 2.

MONTANA: Helena, Oct. 4-6. Sec., Dr. O. G. Klein, First Nat'l Bank Bldg., Helena.

NEVADA: Carson City, Nov. 1. Sec., Dr. G. H. Ross, Industrial Bldg., Carson City.

NEW HAMPSHIRE: Concord, Sept. 9. Sec., Board of Registration in Medicine, Dr. J. S. Wheeler, Room 107, State House, Concord.

NEW JERSEY: *Examination.* Trenton, Oct. 19-22. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

NEW MEXICO: * Santa Fe, Oct. 11-12. Sec., Dr. V. E. Berchtold, 141 Palace Ave., Santa Fe.

NEW YORK: *Examination.* Various Centers, Sept. 27-30. Sec., Dr. J. L. Lochner, Jr., 99 South Pearl St., Albany 7.

OHIO: *Examination.* Columbus, Dec. *Endorsement.* Columbus, Oct. 5. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

OREGON: * *Examination.* Portland, Jan. 1949. *Endorsement.* Oct. 15-16. Final date of filing application is Oct. 1. Exec. Sec., Mr. Howard I. Bobbitt, 608 Failing Bldg., Portland.

PENNSYLVANIA: *Examination.* Philadelphia, Jan., 1949. Act. Sec., Mrs. M. G. Steiner, 351 Education Bldg., Harrisburg.

PUERTO RICO: *Examination.* Santurce, Sept. 7-11. Sec., Mr. Luis Curbo Coll, 22 Purada, Box 3717, Santurce.

RHODE ISLAND: * *Examination.* Providence, Oct. 7-8. Chief, Div. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

SOUTH CAROLINA: *Endorsement.* Sept. 6. Sec., Dr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA: * Jan. 18-19. Sec., Dr. G. J. Van Heuvelen, Pierre.

TENNESSEE: * Sept. 29-30. Sec., H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS: Fort Worth, Nov. 4-6. Sec.-Treas., Dr. M. H. Crabb, 1305 Amicable Bldg., Waco.

VERMONT: Feb. 1949. Sec., Dr. F. J. Lawliss, Richford.

VIRGINIA: *Examination.* Richmond, Dec. 3-4. *Endorsement.* Dec. 2. Sec., Dr. K. D. Graves, 30½ Franklin Road, Roanoke.

WEST VIRGINIA: Charleston, Oct. 4-6. Comm., Public Health Council, Dr. N. H. Dyer, State Dept. of Health, Charleston.

WISCONSIN: * Madison, Jan. 11-13, 1949. Sec., Dr. C. A. Dawson, Tremont Bldg., River Falls, Wis.

WYOMING: *Examination.* Cheyenne, Oct. 4. Sec., Dr. G. M. Anderson, Capitol Bldg., Cheyenne.

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: Juneau. Last week in Aug. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination.* Tucson, Sept. 21. Sec., Mr. Francis A. Ray, Univ. of Arizona, Tucson.

ARKANSAS: *Examination.* Little Rock, Oct. 5. Sec., Mr. L. E. Gebauer, 1002 Donaghey Bldg., Little Rock.

COLORADO: *Examination.* Denver, Sept. 15-16. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

CONNECTICUT: *Examination.* Oct. 9. Exec. Asst., Mary G. Reynolds, 110 Whitney Ave., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, Oct. 18-19. Sec., Dr. G. C. Ruhland, 4130 Municipal Bldg., Washington, D. C.
FLORIDA: *Examination.* Gainesville, Nov. 6. Final date for filing application is Oct. 25. Mr. M. W. Emmel, University of Florida, Gainesville.
IOWA: Des Moines, Oct. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.
MICHIGAN: *Examination.* Ann Arbor and Detroit, Oct. 8-9. Sec., Miss Eloise LeBeau, 1310 West Allegan St., Lansing.
MINNESOTA: *Examination.* Oct. 5-6. Sec.-Treas., Dr. Raymond N. Bieter, 105 Millard Hall, Univ. of Minnesota, Minneapolis.
NEBRASKA: *Examination.* Omaha, Oct. 5-6. Dir., Bureau of Examining Boards, Mr. Oscar F. Humble, Room 1009 State Capitol Bldg., Lincoln.
OKLAHOMA: Spring of 1949. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.
OREGON: *Examination.* Portland, Sept. 4. Sec., Basic Science Examining Committee, Dr. C. D. Byrne, Univ. of Oregon, Eugene.
SOUTH DAKOTA: *Examination.* Vermillion, Dec. 3-4. Sec., Dr. G. M. Evans, Yankton.
TENNESSEE: *Examination.* Memphis & Nashville, Sept. 20-21. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis.
WISCONSIN: *Examination.* Madison, Sept. 25. Final date for filing application is Sept. 18. Sec., Prof. W. H. Barber, Scott & Watson Sts., Ripon.

Medical Motion Pictures

FILM REVIEWS

The Physiology of Normal Menstruation. 16 mm., color, sound or silent, 810 feet (1 reel), showing time twenty-three minutes (sound speed). Prepared in 1948 by Somers Sturgis, M.D., Associate Surgeon, Massachusetts General Hospital, Boston, and John Rock, M.D., Free Hospital for Women, Brookline, Mass. Produced by Sturgis-Grant Productions and sponsored by Schering Corp., Bloomfield, N. J. Procurable on loan from: Medical Service Department, Schering Corporation, Bloomfield, N. J.

This film explains the physiology of normal menstruation clearly and concisely. It so describes the relation of the five principal hormones involved in the menstrual process that the listener can absorb and retain the information.

An introductory statement of what is to be discussed in the film is followed by animated drawings explaining the effect of the three anterior pituitary hormones—namely, the follicle-stimulating hormone, the luteinizing hormone and luteotropin—on the ovary. The entire relationship and the effect on the uter is of the two ovarian hormones, estrogen and progesterone, are reviewed.

The presentation plus the reviews enables one to fill in the gaps in his understanding of the rather confusing interplay of the hormones. The relationships of these hormones is not completely clear to experts in this field. To the average physician they are frequently confusing. This film should be informative to the majority of practicing physicians, medical students and the nursing profession. It could also be used as the basis of an advanced lecture on the more detailed hormonal ramifications of menstrual physiology, or in a similar manner as the basis for discussion of the clinical aspects of menstrual disorders. The authors have combined the art of teaching and the art of visual education very well.

NEW MOTION PICTURE ADDED TO THE A. M. A. LIBRARY

The Story of Menstruation. 16 mm., color, sound, 400 feet, showing time ten minutes. Now available on a loan basis through the Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

This film in colored animation and accompanied by carefully worded commentary begins by indicating the manner in which the pituitary gland governs first the growth of the body and later the function of the ovaries. Next it shows ovulation and the passage of the unfertilized ovum. The thickening and the subsequent menstrual shedding of the endometrium are shown, followed by suggestions as to bathing, diet, exercise and other hygienic measures in relation to menstruation.

The production is intended for showing to groups of adolescent girls in the 14 to 18 year age range to explain the physiology of menstruation with some practical corollaries.

Physicians called upon to address lay audiences such as Girls' School, Parent-Teachers' Association, Women's Club, etc., may find this film a useful adjunct to their lectures.

(A review of "The Story of Menstruation" was published in THE JOURNAL, **138**:1033 [April 5] 1947.)

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Hospital Records as Evidence of Cause of Accident.—The plaintiff sued for damages for injuries alleged to have been caused by the negligence of one of the defendant's bus drivers. After a verdict for the plaintiff the defendant filed a motion for a new trial which was heard in the superior court of Delaware at New Castle.

The plaintiff testified that while he was attempting to board a bus operated by the defendant the door was closed on his ankle and the bus started, throwing him to the ground with a sharp twist to his ankle. There were no witnesses to the accident. The defendant, while not denying the injury, contended that the plaintiff was hurt, not in attempting to board its bus, but because he twisted his ankle while walking at or near the bus stop. In support of this contention, the defendant offered in evidence certain hospital records which contained a statement purportedly made by the plaintiff that he had broken his ankle by twisting it while walking along the sidewalk. The hospital intern who treated the plaintiff for his injuries on the night in question was called to the stand to qualify the hospital report for admission under the Uniform Business Records Act.

The plaintiff's counsel objected to the admission of that part of the hospital record containing the words "Patient states he twisted ankle while walking along street" for the reason, among others, that such language did not constitute an entry made in the regular course of the business of a hospital.

The court pointed out that in theory regular entries constituting the business records of a corporation or institution, and otherwise conforming to the safeguards set out in the act, are said to be so stamped with the reasonable guarantee of trustworthiness as to justify their admission in evidence as an exception to the hearsay rule. The court then proceeded to discuss a number of cases discussing the applicability of this doctrine to hospital records and said that these opinions disclosed near uniformity of judicial thought in at least two respects: (*a*) all matter contained in a business record is not admissible *per se* merely because regularly entered in accordance with some preconceived policy established for the conduct of a particular business and (*b*) to be admissible, the subject matter of the entry must be within the scope, or course, of the business, though some courts are more liberal than others in defining what the scope of a particular business may be. Thus, the mere fact that the statement in this case was regularly entered on a standard hospital form under the heading "state where and how this accident happened" would not of itself render admissible all matter entered thereunder. The rule running through the cited cases seems clearly to be this, said the court, that admissions by patients against their interests, regularly entered in hospital records, may be received in evidence at a trial only if so related to the complaint or injury involved as to facilitate prompt and intelligent diagnosis and treatment. The plaintiff's statement to the effect that he twisted his ankle while walking along the street was, said the court, "pathologically germane" to the injury which necessitated his attendance at the hospital. It is reasonable to suppose that the words "while walking along the street" were not merely descriptive of the injury and thus altogether irrelevant, but aided the attending physician to some extent in diagnosing and treating the fracture. The knowledge that the injury had occurred from a twist while walking ruled out the possibility of the ankle having been crushed. The physician testified that it was necessary for him to know how the injury occurred in order properly to treat it. In the instant case this seems particularly true because at the time of the plaintiff's admission to the hospital a roentgenologist was not available. Immediate treatment of the injury therefore had to be given without benefit of roentgenogram, and the statement as to how the accident happened was of more than usual importance. Hence the court concluded that the statement was properly recorded within the scope of hospital business. Accordingly the new trial requested by the defendant was granted.—*Watts v. Delaware Coach Co., 58 A. (2d) 689 (Del., 1948).*

Current Medical Literature

AMERICAN

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Titles marked with an asterisk (*) are abstracted.

American Journal of Clinical Pathology, Baltimore

18:273-348 (April) 1948

*Clinical, Functional and Histologic Responses of Fatty Metamorphosis of Human Liver to Lipotropic Therapy. M. Franklin, M. R. Salk, F. Steigmann and H. Popper.—p. 273.
*Evaluation of Papanicolaou's Method of Cancer Diagnosis. Jane B. Wiles and C. A. Hellwig.—p. 283.
Use of Wright's Stain in Diagnosis of Malignant Cells in Bronchial Aspirations. L. W. Diggs.—p. 293.
Trisodium Phosphate in Diagnostic Culture of Tubercle Bacilli. H. J. Corper and W. Bain.—p. 303.
Pathology of Hypersplenism. E. von Haam and A. J. Awny.—p. 313.

Lipotropic Therapy in Fatty Metamorphosis of Liver.—The 15 patients selected for this study by Franklin and his associates had enlarged livers with moderate to severe fatty infiltration as proved by initial needle biopsy. Group I consisted of 5 persons without cirrhosis, the severe fatty changes in the liver being presumably due to disturbed nutrition. Group II consisted of 10 patients with fatty cirrhosis. Most of these presented some of the usual signs and symptoms of cirrhosis such as ascites, jaundice, splenomegaly, spider nevi and gastrointestinal disturbance, ae well as laboratory findings of impaired hepatic function. Different types of lipotropic therapy were employed; namely, cystine plus choline, methionine and diet high in protein and in vitamin B complex. Clinical improvement, as evidenced by subjective and objective findings, was noted in almost all patients after "lipotropic" therapy. Functional improvement was evident by all tests performed except the thymol turbidity and total cholesterol tests, results of which remained abnormal. Disappearance of fat and regeneration of parenchymal cells were noted in all instances. Observations on these patients support the efficacy of lipotropic therapy in the removal of fat from human fatty cirrhotic and noncirrhotic livers. This was found associated with clinical and functional improvement. No evidence was found that with the removal of fat the cirrhotic process is arrested.

Papanicolaou's Method of Cancer Diagnosis.—Wiles and Hellwig report on Papanicolaou's method practiced in more than 100 cases on the gynecologic service of a hospital and a tumor clinic in Wichita, Kan. The method has been used with an average accuracy of 80 per cent. Papanicolaou's method has a definite, but limited, usefulness wherever biopsy or curettage is not feasible. Where a suspicious lesion is accessible to biopsy or curettage the vaginal smear method is not indicated. The vaginal smear does not permit differentiation between changes due to irradiation, carcinoma in situ and invasive carcinoma. Tissue examination cannot be replaced by vaginal smears in the definite diagnosis of cancer. The high percentage of false negative smears in endometrial carcinoma counts heavily against the use of vaginal smears as a screening test in cancer detection clinics.

American J. Digestive Diseases, Fort Wayne, Ind.

15:109-134 (April) 1948

Use of High Protein Diets in Treatment of Diabetes Mellitus. D. Adlersberg.—p. 109.
Malnutrition and Vitamin Deficiency in Recently Released Prisoners of War. A. A. Goldbloom, A. Lieberson and C. D. Rosen.—p. 115.
Etiologic Diagnosis of Ulcerative Colitis. W. Z. Fradkin.—p. 119.
Treatment of Diarrhea. A. J. Cantor.—p. 120.
Symptomatology of Chronic Amebiasis (Before and Following Treatment). R. Sandler.—p. 122.
Biochemical Studies of Salicylic Acid and a Series of Its Derivatives. G. J. Martin and S. Byers.—p. 127.
Epidemic Gastro-Enteritis. N. B. Jaffe.—p. 131.

American Journal of Orthopsychiatry, New York

18:191-380 (April) 1948. **Partial Index**

Personality Adjustment Through Social Action. R. M. Wittenberg.—p. 207.
The Unmarried Father. N. Reider.—p. 230.
High School Mental Hygiene Survey. J. Hertzman.—p. 238.
Adoptive Parents in Child Guidance Clinic. Barbara Judkins.—p. 257.
Rorschach Intellectual Indicators in Neurotics. J. Wishner.—p. 265.
Rorschach Study of Prejudiced Personality. Suzanne Reichard.—p. 280.
Validation Test of Rorschach Movement Interpretations. Barbara M. Lane.—p. 292.
Concept of the Psychopath. H. Cason.—p. 297.
Pseudo-Psychotic Nucleus in Behavior Disorders. G. E. Gardner.—p. 309.
Childhood Mental Disease in America: Review of Literature Before 1903. E. A. Rubinstein.—p. 314.
Effects of Combat on Delinquent Boy. M. L. Miller.—p. 314.

Annals of Internal Medicine, Lancaster, Pa.

28:521-700 (March) 1948

Convalescence: Study in Physiological Recovery of Nitrogen Metabolism and Liver Function. R. W. Keeton and others.—p. 521.
Human Factors in High Performance Aircraft. B. Groesbeck Jr.—p. 552.
Dilution Acidosis. G. T. Shires and J. Holman.—p. 557.
Functional Patters in Renal Disease. A. C. Corcoran, R. D. Taylor and I. H. Page.—p. 560.
Clinical Appraisal of Benadryl, Pyribenzamine and Anthallan in Treatment of Allergic Disorders. M. S. Kleckner.—p. 583.
Therapeutic Use of Radioactive Elements in Malignancy. P. F. Hahn and C. W. Sheppard.—p. 598.
Inhalation of Dust Penicillin. L. Krasno, Mary Karp and P. S. Rhoads.—p. 607.
Spontaneous Mediastinal Emphysema and Spontaneous Pneumothorax—A Report of 20 Cases. Helen A. Dickie.—p. 618.
Hypertensive Cerebral Swelling, a Characteristic Clinico-Pathologic Syndrome. I. M. Scheinker.—p. 630.

28:701-886 (April) 1948

*Effects of Shock on Kidney. D. D. Van Slyke.—p. 701.
Studies on Circulation with Aid of Tagged Erythrocytes in Case of Orthostatic Hypotension. (Asympathicotonic Hypotension). G. Nylin and M. Levander.—p. 723.
Pain Mechanisms and Frontal Lobes: Study of Prefrontal Lobotomy for Intractable Pain. W. Freeman and J. W. Watts.—p. 747.
*Problem of Malignant Hypertension and Its Treatment by Splanchnic Resection. M. M. Peet and E. M. Isberg.—p. 755.
Pulmonary Brucellosis. W. A. Harvey.—p. 768
War Edema in Civilian Population of Saipan. N. B. Kurnick.—p. 782.
Gynecomastia Following Severe Starvation. E. C. Jacobs.—p. 792.
Amebic Liver Abscess. M. Zuckerbrod, J. Litwins, F. T. Roghano and D. Jellinger.—p. 798.
Studies with Medicated Aerosols: Use of Lungs as Portal for Introduction of Therapeutic Agents for Systemic Effect. S. J. Prigal.—p. 834.
Role of Preventive Medicine in Clinical Practice. W. G. Smillie.—p. 826.
Brucella Antibodies Following Cholera Vaccination. C. W. Eisele, N. B. McCullough and Grace A. Beal.—p. 833.

Effects of Shock on Kidney.—Van Slyke discusses shock caused by hemorrhage, burns, trauma, dehydration or other injury in which there is an inadequate volume of blood to fill the vascular bed. Prostration, cold perspiration and bloodless or cyanotic skin are the visible effects. An immediate effect of shock is a decrease in renal blood flow and function, which may lead to complete anuria. Compensatory constriction of nonrenal peripheral vessels follows, and if the loss of circulating blood volume has not been too severe, renal blood flow and function may be quickly restored. If shock is severe, the kidney is included in the peripheral constriction. Renal constriction and anuria in this phase may continue even when the arterial blood pressure is as high as 100 mm. If renal ischemia does not continue too long restoration of renal function quickly follows restoration of the general circulation. If severe renal ischemia continues for a sufficient number of hours, the second, or renal damage phase, of renal shock develops. The most obvious visible damage is located in the cells of the loop of Henle and the distal tubules. Tubular reabsorption of excretory products from glomerular filtrate appears to be the most probable cause of renal failure in this phase. If the renal damage is not too severe gradual recovery of the kidneys may occur. In fatal cases anuria or inadequate excretion persists, and death in uremia occurs in two to twenty days. To diminish the danger of death from postshock uremia it is advisable to cut the duration of shock as short as possible by quick restoration of blood volume. If acidosis is present, sodium bicarbonate should be administered. While administration of large amounts of fluid may be necessary to obtain normal blood volume and hydration, overadministration is to be avoided. Measuring blood and plasma specific gravities assists in guiding administration of

fluid. When, after recovery from acute shock, anuria or excretion of urine of low volume and specific gravity persists and blood urea continues to mount, a diet high in carbohydrates and fat and low in protein should be given to retard accumulation of catabolic products. Vividiffusion or peritoneal irrigation may retard onset of uremia and increase the opportunity for recovery of renal function.

Splanchnic Resection in Malignant Hypertension.—Peet and Isberg stress that once the diagnosis of malignant hypertension has been made arrangements should be made for treatment by splanchnic resection, because timely surgical treatment offers sure hope to the victim of this terrible malady. During the time from November 1933 to December 1941 a total of 162 cases were diagnosed as malignant hypertension and were surgically treated. Follow-up information was inadequate in 19 cases. This is a study of 143 patients followed for five to twelve years after surgical treatment. Diastolic blood pressure levels varied between 140 and 190 mm. Headache, visual disturbance and dyspnea were the most common complaints. Ninety-one per cent of the patients had organic heart disease; 84 per cent had impaired renal function and 20 per cent had experienced cerebrovascular accidents. The operative mortality in malignant hypertension was 10 per cent. The five year survival rate in the 143 cases was 21.6 per cent. All living patients receiving a funduscopic examination five years and more after operation showed no evidence of papilledema. Four patients were maintaining blood pressure levels within normal range five to eleven years after operation. If splanchnic resection can be performed early, before heart disease has occurred, the outlook is good, for 11 of 13 such patients with malignant hypertension were living five to twelve years after operation. Once renal function becomes moderately or markedly impaired, splanchnic resection is futile.

Cincinnati Journal of Medicine

29:143-198 (March) 1948

Social Factors and Death Rates in Cincinnati. F. P. Allen.—p. 143.
Weakness of Lower Extremities as Complication of Pregnancy. H. W. Neumann.—p. 149.

29:199-256 (April) 1948

A Century and a Third of Vagotomy. J. L. DeCourcy.—p. 199.
The Pineal Body. C. K. Hoffing.—p. 210.

Georgia Medical Association Journal, Atlanta

37:67-120 (March) 1948

Roentgenologic Examination of Small Intestine. C. A. Good and M. Elizabeth H. Fletcher.—p. 67.
Incidence of Bone Tumors in Large General Hospital. L. P. Holmes, D. Robinson and S. W. Brown.—p. 74.
Roentgenographic Survey of Genito-Urinary Tract. J. J. Clark.—p. 80.
Diverticulitis of Sigmoid with Obstruction. H. H. McGee.—p. 82.
Skiodan Acacia in Hysterosalpingography. M. Mass.—p. 84.
Metastatic Cancer of Lung. R. C. Pendergrass.—p. 85.

Illinois Medical Journal, Chicago

93:121-164 (March) 1948

Diagnosis of Accessible Cancer. D. P. Slaughter.—p. 134.
Vesicovaginal Fistula. J. E. Bellas.—p. 138.
Microbiologic Assay of Antibiotics. E. E. Vicher and S. A. Levinson.—p. 143.
Prevention and Treatment of Complications of Cataract Surgery. L. Bothman.—p. 148.
Immunization Procedures. J. J. Sievers.—p. 153.
Typhus Fever in Illinois. S. A. Franzblau and H. Javid.—p. 159.
Glomus Tumors. S. Perlow and H. A. Roth.—p. 162.

Journal of Clinical Endocrinology, Springfield, Ill.

8:111-208 (Feb.) 1948

Feminizing Adrenal Tumor Causing Gynecomastia in Boy of Five Years Contrasted with Virilizing Tumor in Five-Year-Old Girl. Classification of 70 Cases of Adrenal Tumor in Children According to Their Hormonal Manifestations and Review of 11 Cases of Feminizing Adrenal Tumor in Adults. L. Wilkins.—p. 111.
Effect of Starvation on Urinary 17-Ketosteroid Excretion. R. L. Landau, Kathryn Knowlton, Dolores Anderson and others.—p. 133.
Comparison of Oral and Vaginal Epithelial Smears. D. E. Ziskin and Ruth Moulton.—p. 146.
Chemical Assay for "Cortin": Determination of Formaldehyde Liberated on Oxidation with Periodic Acid. W. H. Daughaday, H. Jaffe and R. H. Williams.—p. 166.
Hormone Secretion by Human Placenta Grown in Tissue Culture. H. L. Stewart Jr., M. E. Sano and T. L. Montgomery.—p. 175.
Endocrine Reviews. W. O. Thompson.—p. 189.
Steroid Nomenclature. H. L. Mason.—p. 190.

Journal of Infectious Diseases, Chicago

82:101-196 (March-April) 1948. **Partial Index**

Interrelationships of Blood Cells of Cattle in Health and Following an Induced Infection with Brucella Abortus. L. C. Ferguson, M. R. Irwin and B. A. Beach.—p. 101.
Studies on Hemoflagellates: IV. Observations Concerning Some Biochemical Activities in Culture, and Respiration of Three Species of Leishmanias and Trypanosoma cruzi. S. Lu Chang.—p. 109.
Thiourea and Inhibition of Growth of Fungi. T. S. Danowski and M. Tager.—p. 119.
Effect of Cysteine on Antitrypanosome Activity of Antimonials. G. Chen and E. M. K. Geiling.—p. 131.
Effect of Methyl-Bis (Beta-Chloroethyl) Amine on Trypanosoma Equiperdum. G. Chen.—p. 133.
*Studies of Distribution of Poliomyelitis Virus: IV. In Rural Schools Following an Epidemic. T. Francis Jr. and G. C. Brown.—p. 163.
Nasal Transmission of Pleuropneumonia-Like Organisms in Mice and Rats. J. B. Nelson.—p. 169.
Effect of Thiamine Deficiency on Western Equine Encephalomyelitis in Mice. E. B. Kearney, W. L. Pond, B. A. Plass, K. H. Maddy and others.—p. 177.

Distribution of Poliomyelitis Virus After Epidemic.—Francis and Brown say that in the summer and fall of 1945 Tennessee experienced an epidemic of poliomyelitis which involved principally rural areas. Since the date set for the opening of schools followed shortly on a heavy incidence of poliomyelitis, an opportunity was presented to obtain information relative to the presence of infection in the pupils arriving from the farms on opening day and to study the possible spread of virus, as measured by its detection in the stools of children in the school. Two rural schools, with 48 and 51 pupils respectively, were selected for study. In one school none of the pupils had detectable virus in his intestinal tract at the time of the first collection, but virus was isolated from 1 person two weeks later. It appears probable that this person had acquired the infection outside the school, as all pupils were free from the virus at the time of the original collection; in this instance there was a history of earlier association with a paralytic case of poliomyelitis. In another school, 2 children were carrying virus on the opening day but only 1 of these still carried it two weeks later, and no other children in the school acquired the infection. Thus the study yielded no evidence of significant dissemination of virus in the groups. The results indicate again the relative differences in efficiency between close familial association and the less intimate nonfamilial contact in the transmission of poliomyelitis virus.

Journal-Lancet, Minneapolis

68:117-168 (April) 1948

Surgical Sterilization in Women. A Ten Year Study. C. B. Darner.—p. 118.
Recent Therapy in Treatment of Acne. E. Grinnell.—p. 121.
Veterans Medical Care. W. A. Wright.—p. 124.
Chronic Myocarditis of Unknown Etiology: Report of Case. A. E. Moe and J. D. LeMar.—p. 127.
Mercurial Diuretics. R. O. Goehl.—p. 131.
Status of North Dakota's Plasma Program. M. E. Koons.—p. 136.

Journal of Nutrition, Philadelphia

35:399-522 (April) 1948. **Partial Index**

Determination of Minimum Vitamin Requirements for Growth. D. M. Hegsted.—p. 399.
False High Values for Ascorbic Acid in Guava Juice: Note on Use of Colorimetric Method with 2,4-Dinitrophenylhydrazine. Eva Hartzler.—p. 419.
Absorption of Iron from Beef by Women. Frances A. Johnston, Ruth Frenchman and Euphemia D. Boroughs.—p. 453.
Effect of Inanition on Mammary-Gland Development and Lactation. J. F. Sykes, T. R. Wrenn and S. R. Hall.—p. 467.
Physiologic Availability of Pantothenyl Alcohol. S. H. Rubin, J. M. Cooperman, M. E. Moore and J. Scheiner.—p. 499.
Energy Expenditure for Quiet Play and Cycling of Boys Seven to Fourteen Years of Age. Clara M. Taylor, Mina W. Lamb, Mary E. Robertson and Grace MacLeod.—p. 511.

Nebraska State Medical Journal, Lincoln

33:77-112 (March) 1948

Statesmanship in Medicine. E. L. Bortz.—p. 79.
Prostatic Disease: with Special Reference to Early Diagnosis and Treatment of Carcinoma of Prostate. R. B. Henline.—p. 84.
Evaluation of Present Day Treatment of Cirrhosis of Liver. C. Frandsen.—p. 89.
Case-Finding Value of Miniature X-Rays of Chest. M. Fleishman.—p. 92.
Infantile Toxoplasmic Encephalitis: Case Report with Unusual Anamnestic Features. F. H. Tanner, P. M. Bancroft and H. E. Harvey.—p. 96.

New England Journal of Medicine, Boston

238:493-544 (April 8) 1948

*Roentgenographic Studies of Gastrointestinal Tract Following Section of Vagus Nerves for Peptic Ulcer. M. Ritvo and I. A. Shauffer.—p. 496.
Multiple Localized Pleural Effusions as Manifestation of Congestive Heart Failure: Report of a Case. M. DiMaio.—p. 502.
Ineffectiveness of Aluminum Subacetate in Rheumatoid Arthritis. A. Blazer, H. H. Friedman and O. Steinbrocker.—p. 507.
Role of Pleuropneumonia-Like Organism in Genitourinary and Joint Disease. L. Dienes, M. W. Repes, W. E. Smith, Sarabelle Madoff and Others.—p. 509.
Endobronchial Metastasis of Renal Cell Adenocarcinoma.—p. 533.
Carcinoma of Tail of Pancreas, with Invasion of Spleen, Left Adrenal Gland and Posterior Wall of Stomach and Metastases to Liver and Lungs.—p. 535.

Roentgenography of Gastrointestinal Tract Following Resection of Vagus.—Ritvo and Shauffer made roentgenographic studies on 29 patients with transthoracic section of the vagus nerve and 4 with transabdominal resection of the vagus nerve. In the early postoperative stages there was definite gastric dilatation and atonicity in most cases. Sluggish, ineffective and arrhythmic peristalsis or absent peristalsis was associated with dilatation and atonicity. Emptying times, both initial and final, were increased. These changes occurred to a lesser degree in patients with previous gastroenterostomies and in those with partial gastrectomies. Two patients had gastroenterostomies after vagotomy for dilatation and retention. Follow-up studies showed a return toward the normal from these changes within six months to a year. Complete return to normal in all respects was not found in any case. The ulcers healed promptly after operation. This was especially striking in the cases of stomal and jejunal ulcers in the patients with partial gastrectomy. The postoperative size of the small bowel was not remarkable in any case; the motility was slow, apparently owing to the delay in emptying of the stomach. In 1 patient temporary dysphagia developed after transabdominal resection of the vagus nerve.

New York State Journal of Medicine, New York

48:563-672 (March 15) 1948

Management of Gastric Hemorrhage. A. F. R. Andresen.—p. 603.
Primary Resection for Cancer of Lower Bowel. H. E. Bacon and R. J. Rowe.—p. 607.
Differential Diagnosis of Abdominal Tumors by Roentgen Method. S. Brown.—p. 609.
*Clinical Experience with Nitrogen Mustard. W. W. Faloon and L. W. Gorham.—p. 612.
Plastic Surgery in New York State. E. B. Hague.—p. 617.
Nerve Block Therapy for Pain of Laryngeal Tuberculosis. E. M. Papper and E. A. Rovenstine.—p. 622.
Intractable Edema: Clinical Therapeutic Implications. L. Leiter.—p. 624.
*Ringworm of Scalp in New York. R. M. Montgomery, J. A. Heinlein and Frances E. Karpluk.—p. 629.

Clinical Experience with Nitrogen Mustard.—Faloon and Gorham report on the use of methyl-bis (beta-chlorethyl) amine hydrochloride in 15 patients. All patients except 1 received intravenous injections on four consecutive days of 0.1 mg. of methyl-bis (beta-chloroethyl) amine hydrochloride per kilogram of body weight. The injection was made intravenously through the tubing of rapidly flowing isotonic solution of sodium chloride. The procedure is carried out within five minutes after dissolving the nitrogen mustard. All patients were followed with complete blood counts at least twice weekly for the three weeks following injection. The use of nitrogen mustards in Hodgkin's disease, polycythemia vera and lymphosarcoma will frequently induce temporary remissions. Experience, confirming that of other workers, does not allow a similar view of the leukemias treated with this substance. The toxic effects of the drugs make them potentially dangerous, and they must be used with care, both in handling and in the follow-up of their effects on the hematologic picture.

Ringworm of Scalp.—Montgomery says that from 1940 to 1947, inclusive, 2,857 cases of tinea capitis have been studied at the New York Skin and Cancer Unit. Of these, 83.3 per cent were caused by Microsporon audouini. There has been a sharp increase in ringworm of the scalp since 1943, and a substantial relative increase of infection with M. audouini. Three cases of infection with Trichophyton crateriforme, 4 cases of infection of the scalp with Trichophyton sulfureum and 4 cases of infection of the eyelashes with M. audouini are reported.

Surgery, St. Louis

22:603-734 (April) 1948

Changing Status of Surgical Care. I. S. Ravdin.—p. 603.
Pathogenesis of Diastolic Hypertension. P. Heinbecker.—p. 618.
*Indications for Sympathectomy in Treatment of Hypertension. T. Findley.—p. 639.
Gunshot Wounds Involving Abdominal Aorta. Report of 2 Cases. C. E. Holzer Jr.—p. 645.
War Wounds of Rectum and Anal Sphincter. W. S. McCune.—p. 653.
Cannula for Pancreatic Fistula: Device for Permitting Complete Periodic Experimental Collection of Pancreatic Juice. I. D. Baronofsky.—p. 665.
Verrucous Carcinoma of Oral Cavity. J. V. Ackerman.—p. 670.
Hip Nail Counterbore. G. J. Curry.—p. 679.

Sympathectomy in Hypertension.—Findley maintains that sympathectomy for hypertension has not been placed on a rational basis. The one known basic fact is t at elevation of blood pressure is due to increased peripheral resistance, but there is as yet no agreement as to whether the arteriolar constriction is of humoral or nervous origin. Constitution, arteriosclerosis, renal function, nervous system, endocrine organs and pregnancy are some of the factors that may exert vasoconstrictor influences. Any enlargement of the vascular bed which follows sympathectomy is probably temporary. In the author's experience with about 100 hypertensive patients who have been subjected to a bilateral splanchnicectomy and excision of both sympathetic chains from the fourth or fifth thoracic through the second lumbar ganglions, nothing resembling a "cure" was ever seen. Invariably, the blood pressure slowly rises after the operation to or somewhat below the preoperative level. Patients should not be selected for operation solely on the basis of tests which measure only fluctuations in blood pressure. Procedures such as the cold pressor test, the "amytal" sedation test, splanchnic block and the induction of high spinal anesthesia have proved notoriously unreliable. The operation should be reserved for patients with severe symptoms but no gross impairment of cerebral, cardiac or renal function. The operation should not be done on young persons with mild asymptomatic hypertension. Sympathectomy may profitably be done on patients over 50 years of age, provided that other requirements are met. Patients should be told that sympathectomy offers palliation and not cure.

Tennessee State Medical Assn. Journal, Nashville

41:77-114 (March) 1948

Memorial Address. C. R. Henry.—p. 77.
Important Factors in Diagnosis of Favorable Brain Tumors. N. Gotten and C. D. Hawkes.—p. 80.
Public Health Aspects of Medicine in Oak Ridge. C. H. Benning.—p. 87.

Union Médicale du Canada, Montreal

77:391-514 (April) 1948

*Rheumatic Fever: Para-Aminobenzoic Acid. M. Belisle.—p. 392.
Puncture Biopsy of Liver, Method and Results. P. Cazal.—p. 426.
Shwartzman Phenomenon. Anne-Marie Masson.—p. 433.
Early Diagnosis of Cancer of Stomach. A. F. Vallée.—p. 440.
Sedimentation Test: Diagnosis and Prognosis. J. Pesant.—p. 448.

Para-Aminobenzoic Acid in Rheumatic Fever.—Belisle treated 3 patients, 2 men aged 30 and 54 respectively and a woman aged 21, who had rheumatic fever with sodium salicylate combined with para-aminobenzoic acid. Twenty-four grams of para-aminobenzoic acid was given by mouth daily in fractional doses of 2 Gm. every two hours. By this combined treatment the initial level of the sodium salicylate in the blood was increased two to five times. Thus a therapeutic concentration of the salicylate in the blood recommended by majority of the authors—i. e., 35 mg. per hundred cubic centimeters—was obtained, and in some instances with relatively small doses of sodium salicylate. There was a drop in the salicylate level in the blood of these patients when the administration of para-aminobenzoic acid was discontinued. The para-aminobenzoic acid will have its place in the therapeutic armamentarium for rheumatic fever, particularly in those instances in which an optimum therapeutic concentration cannot be obtained by administration of the sodium salicylate alone. The clinical employment of the para-aminobenzoic acid may be limited by its obligatory administration every two hours.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Surgery, Bristol

35:225-336 (Jan.) 1948

*Surgery of Lumbar Intervertebral Disk Protrusion: Study of Principles and Results Based on 100 Consecutive Cases Submitted to Operation. M. A. Falconer, M. McGeorge and A. C. Begg.—p. 225.
Surgical Treatment of Carcinoma of Hypopharynx and Esophagus. H. Wookey.—p. 249.
Gram-Negative Meningitis Following Head Wounds with Especial Reference to Infection with Coliform Bacilli. W. Lewin.—p. 266.
Review of Surgical Methods in Treatment of Essential Hypertension. A. L. McGregor.—p. 281.
Persistent Priapism. H. Bailey.—p. 298.
*Posterior Gastroenterostomy for Organic Pyloric Stenosis: Review of End-Results of 80 Cases. H. Reid and R. Marcus.—p. 304.
Mesenteric Cysts. M. Paul.—p. 308.
Intraperitoneal Hemorrhage of Unusual Etiology with Report of 2 Cases. M. F. A. Woodruff.—p. 311.
Peritoneal Loose Bodies. J. A. Ross and A. McQueen.—p. 313.
Strangulated Obturator Hernia. A. M. Desmond and F. Hutter.—p. 318.

Surgery of Intervertebral Disk Protrusion.—Falconer and his associates are concerned with factors which make for success or failure in intervertebral disk surgery, particularly as applied to the lumbar region. The study is based on an analysis of the clinical, operative and follow-up observations in 100 consecutive patients subjected to operation with their condition diagnosed as prolapsed lumbar intervertebral disk. A careful selection of cases is the first essential. All patients suffering from severe sciatica and/or pain low in the back should be treated first by rest in bed or immobilization for at least one month. Patients whose sciatica is not relieved appreciably by rest in bed should then be carefully investigated. A few will prove to have lesions like cauda equina tumor or granulomatous or neoplastic disease of the spine, but most will have disk lesions and should have surgical operation. The affected intervertebral disk must be exposed adequately. If this should prove difficult to achieve by an interlaminar approach, a laminectomy should be performed, for a poor exposure prevents the surgeon from curetting thoroughly the interior of the disk. Provided the interarticular joints are left intact, a laminectomy does not permanently weaken the spine. Disk prolapses may be divided into four groups, projections, extrusions, intermittent prolapses and scarred disks. Intermittent prolapses in particular, are a group which are apt to be overlooked at operation, and it is probable that many of the negative explorations occurred in cases involving this type of lesion. In order to avoid persistence or recurrence of symptoms, it is essential to remove all loose and readily detachable tissue from within the pathologic disk. In many instances this necessitates exposure and curettage of the pathologic disk from both sides of the theca. During convalescence the patient should undergo graduated exercises and physical training designed to strengthen weakened erector spinae muscles and to promote general physical fitness. This hastens the return to work. Spinal fusion is seldom warranted. If, after operation for disk prolapse, symptoms persist or recur, reexploration should be considered. Continued symptoms have often been due to an inadequate removal of the diseased disk.

Posterior Gastroenterostomy for Pyloric Stenosis.—Reid and Marcus review the results of gastroenterostomy in 80 cases of pyloric stenosis. The operations were performed by different surgeons at the Liverpool Royal Infirmary between 1928 and 1938. Organic pyloric stenosis commonly is the result of a long standing duodenal ulcer which in the process of healing occludes the pylorus, with resulting gastric hypertrophy and dilatation. The scarring may be so great that the pylorus only admits a bristle. The patient is subjected to slow starvation and dehydration. Copious vomiting occurs in the majority of cases. In all cases under review patients were treated by a posterior no-loop vertical isoperistaltic gastroenterostomy with a large stoma. The average age of the patients at the time of operation was 50 years. Two of the patients died as the result of the operation and 15 others could not be traced for follow-up. Of the 63 who could be traced, 9 died within ten years; the other 54 were alive over ten years after the operation. The general impression is gained that gastroenterostomy is definitely worth while. Most of these patients expressed their gratitude for the operation and believed that it had benefited them. The average period of convalescence after operation is four weeks. In partial gastrectomy it is much longer. The diet was a normal mixed diet. Anemia and vitamin deficiency did not occur. There was no evidence of the so-called dumping syndrome, which occurs in a considerable percentage of the patients after subtotal gastrectomy. The authors believe that with modern anesthesia, chemotherapy, and adequate preoperative and postoperative measures, the operative mortality should not be more than 1 per cent.

Lancet, London

1:441-468 (March 20) 1948

The Full-Time Specialist. F. A. Jones.—p. 433.
Assessment of Intestinal Carminatives. S. Alstead and J. F. Patterson.—p. 437.
Actinomycosis of Liver with Recovery. L. M. Shorvon.—p. 439.
*Results of Sympathectomy of Upper Limb with Special Reference to Raynaud's Disease. H. Barcroft and G. T. C. Hamilton.—p. 441.
Electronarcosis: Its Value and Its Dangers. G. Garmany and D. F. Early.—p. 444.
*Fructose and Fructolysis in Semen in Relation to Fertility. T. Mann.—p. 446.

Sympathectomy of Upper Limb.—The fifty-six limbs studied by Barcroft and Hamilton were those of persons who had undergone sympathectomy for Raynaud's disease, Raynaud's phenomenon, thromboangiitis obliterans, causalgia and trophic ulcer. The interval between operations and investigation varied from a month to six years. All the sympathectomies were preganglionic sections. Examinations of seventeen upper limbs from one to six months after sympathectomy, in the form of a preganglionic section, revealed no recurrence of attacks in fourteen of sixteen hands operated on for Raynaud's phenomenon; in two hands the attacks were less frequent and less severe. Vasomotor and sudomotor reflexes were absent. This indicates that preganglionic section completely sympathectomizes the limb; there is no outflow to the hand above the second thoracic anterior spinal nerve root. Examination of the other thirty-nine upper limbs from one to six years after preganglionic section showed considerable clinical improvement. There was no recurrence of vasospastic attacks in eighteen of thirty-six limbs operated on for Raynaud's phenomenon. In fourteen hands the attacks were less distressing; only 4 patients had obtained no benefit. Vasomotor and sudomotor reflexes, though absent in some limbs, were present in many. It follows that a nervous connection between the brain and the vessels and sweat glands of the hands is often reestablished. The persistence of the excellent clinical results, in spite of the reestablishment of a vasomotor path, probably signifies that the new path is functionally inferior to the original. Partial regeneration is the most likely explanation of the new nerve path.

Fructose and Fructolysis in Semen.—Mann asserts that the survival of spermatozoa within ejaculated semen depends largely on the supply of nutrient material in the seminal plasma. The nutrient substance present in the seminal plasma is a reducing and glycolyzable carbohydrate. The nature of the glycolyzable carbohydrate remained unknown until recently, when chemical investigations have shown that the seminal sugar is d-fructose. The survival of spermatozoa in ejaculated semen depends largely on the amount of fructose in the seminal plasma. The formation and secretion of fructose in the male accessory sex glands is controlled by testicular hormone. The amount of fructose present in semen can be measured colorimetrically. A method of doing this is described. A low fructose level in the semen suggests either hormonal or spermatozoal deficiency; but a high semen-fructose level does not necessarily indicate spermatozoal efficiency. The level is normally subject to fluctuation. Fructose disappears from semen incubated in vitro; the rate of fructolysis indicates the amount of spermatozoal metabolic activity. Fructolysis plays an essential part in the survival of stored spermatozoa, as used in artificial insemination.

Acta Medica Scandinavica, Stockholm

129:509-616 (Feb. 25) 1948. **Partial Index**

Epidemic of Acute Glomerulonephritis in Amsterdam. P. Formijne.—p. 509.
Addis-Shevky Concentration Test. J. Øster.—p. 513.
*Autotransplantation of Joint Capsule, an Attempt to Desensitize Patients Suffering from Rheumatoid Arthritis. H. Novotny.—p. 524.
*Thrombocythemia Hemorrhagica. O. Mortensen.—p. 547.
Development of Putrid Pulmonary Abscess in Emphysema Bladders in Primary Atypic Pneumonia. M. C. Ehrström.—p. 573.

Autotransplantation of Joint Capsule in Rheumatoid Arthritis.—Novotny observed that when patients with rheumatoid arthritis undergo certain operations, they often show signs of possible desensitization. On the presumption that the course of the disease is connected with allergic phenomena, he has tried to produce a state of desensitization by means of a transplantation of the diseased tissue of the capsule, preferably from the patient's knee joint, subcutaneously to the lower umbilical region. In 11 of the 12 cases described, a favorable postoperative reaction appeared, with reduction of pain and swelling and an increase of the mobility of the joints. In 1 case there was not a reaction, and in this case the transplanted tissue became necrotic. Of the 11 patients, 7 have remained in a better condition after operation. The period of observation has been nine months in 1 case and twelve to seventeen months in 6 cases. Two patients had a complete and 2 a partial relapse in the course of a year.

Hemorrhagic Thrombocytosis.—Mortensen reports the case of a man, aged 64, who had had symptoms of polycythemia vera which had later been followed by a leukemia-like condition. There was a hemorrhagic tendency, while the thrombocyte count was 6,000,000. Coagulation time and prothrombin time were normal. There was marked neutrophilic leukocytosis with eosinophilia. There were signs of gastroduodenitis as in a number of the cases earlier described. The syndrome is regarded as a malignant hyperfunction of the bone marrow of the same type as myeloid leukemia and polycythemia vera.

Brasil-Medico Rio de Janeiro

62:9-50 (Feb. 7 and 14) 1948. **Partial Index**

*Carcinoma of Gallbladder. J. de Brito.—p. 9.

Carcinoma of Gallbladder.—Carcinoma of the gallbladder is rare. The cirrhotic type is the most frequent. The early symptoms are those of lithiasis. As the disease progresses the tumor becomes palpable, hard and painful. Pain radiates to the ribs of the right side and to the right lung. The late stage is characterized by aggravation of the digestive disorders, anorexia, acute anemia, jaundice, symptoms due to metastases and progressive cachexia. The diagnosis is difficult. The therapy is one of prevention, consisting of a cholesystectomy as soon as the diagnosis of gallstone disease is made. The prognosis is unfavorable.

Klinische Wochenschrift, Heidelberg

26:1-32 (Jan. 1) 1948. **Partial Index**

*Circulatory Dynamics and Sympathetic Tonus in Human Beings with Arteriovenous Fistulas. O. Gauer and F. Linder.—p. 1.
*Genesis of Megaloblastic Blood Formation. U. Haenel.—p. 8.
Regulation of Plasma Protein Bodies: III. Plasma Protein Bodies and Quantities in Ascites Punctates. M. Gulzow.—p. 12.
Encephalogram After Typhus. F. Schmieder.—p. 14.

Circulatory Dynamics and Sympathetic Tonus in Presence of Arteriovenous Fistulas.—Gauer and Linder say that observations during the first world war demonstrated that arteriovenous aneurysms resulting from gunshot injuries of peripheral vessels not only produce circulatory disturbances locally, in the involved part of the body, but also exert an effect on the heart and on the general circulation. Nearly 400 aneurysms were observed during the second world war at the clinic in Heidelberg and 150 arteriovenous fistulas were operated on. During the first year after the war 16 patients with arteriovenous fistulas were studied. Depending on the size of the communicating opening in an arteriovenous opening, the peripheral circulatory resistance is reduced by about 40 per cent or more. In order to maintain an adequate blood pressure, the minute volume of the heart is correspondingly increased. This chronic increase in the performance of the heart leads to cardiac dilatation and insufficiency. Permanently increased performance of the circulation is accompanied by an increase in venous tonus and changes in the muscle structure of the heart, which is manifested in a dilatation of the cardiac cavities. If the fistula is closed, many hours are required until equilibrium is restored. The circulatory changes caused by the arteriovenous fistula are capable of regression. Early surgical removal of the circulatory short circuit is advisable.

Genesis of Megaloblastic Blood Formation.—Haenel presents observations on bone marrow punctates of patients with pernicious anemia. He concludes that megaloblasts derive from undifferentiated reticulated cells. Megaloblastic blood formation is mesenchymal in contradistinction to normal parenchymatous erythropoiesis. A second factor must be assumed for the development of megaloblasts. This factor is the loss of the heteroplastic divisibility of the cell which is regarded as the morphogenetic manifestation of the lack of the antipernicious anemia principle. The peculiarity of the megaloblastic structure of the nucleus is interpreted as the persistence of mesenchymal characteristics of the nucleus.

Semaine des Hôpitaux de Paris

23:1749-1790 (July 28) 1947

*Study in Phenylpyruvic Oligophrenia. J. Delay.—p. 1749.
*Phenylpyruvic Oligophrenia. J. Delay, P. Pichot, M. Polonovski and others.—p. 1749.
*Encephalography with Gas in Oligophrenia. J. Delay, P. Desclaux and P. Pichot.—p. 1758.
Congenital Ectodermal Defects and Oligophrenia. A. Touraine.—p. 1767.
Psychologic Aspects of Oligophrenia. P. Pichot.—p. 1771.

Phenylpyruvic Oligophrenia.—Delay points out that in the group of oligophrenias a distinction should be made between those which depend on exogenic and those which depend on endogenic and genetic causes. The author designates the first as oligophrenites and the second as oligophrenoses. The former are the results of exogenic factors such as trauma and toxic infection, the latter represent degenerative disease. Certain oligophrenoses of recessive monomeric heredity with metabolic disturbances are of special interest from the point of view of general pathology, for instance, amaurotic idiocy of Tay-Sachs, which is accompanied by disturbances in the lipid metabolism, and phenylpyruvic oligophrenia, which is accompanied by metabolic disturbances of proteins and more especially of amino acids.

Phenylpyruvic Oligophrenia.—Delay, Polonovski and other investigators review the clinical genetic and biologic aspects of phenylpyruvic oligophrenia. They give particular attention to reports by Fölling of Norway, who was first to call attention to the presence of phenylpyruvic acid in the urine of patients with oligophrenia and also suggested the probable genetic nature of this disorder. The authors consider, in addition to Fölling's contributions, those of several other observers and cite a case of their own. The new fact they stress is a considerable disturbance detectable in tests of hepatic function. Phenylpyruvic oligophrenia possibly represents the key to a large number of problems in psychiatry, neurology, genetics and biochemistry. The first results obtained in studies on this problem, although they give no definite solution, open an almost unlimited field for new investigations on pathogenic mechanisms that may throw new light on familial disorders of the nervous system and on the relation between biochemical disturbances of genetic origin and psychiatric disturbances; they give an explanation for a process which has been spoken of as degeneration or abiotrophy.

Encephalography in Oligophrenia.—Delay and his co-workers describe the technic used by them and experiences with this method in 70 patients with oligophrenia. The method represents practically an anatomic examination on the living. Certain diagnoses can be verified only by this method, for instance, cases of agenesia of the corpus callosum or the syndrome of Little with median ventricle. Encephalography facilitates differentiation of a sydrome like microcephalia and its different forms. It is also a valuable aid in prognosis. Although the information obtained so far is still fragmentary, the first results are encouraging and suggest that the solution of these problems is found only by comparison of numerous encephalographic records with information obtained by clinical, genetic, psychologic and biologic studies on patients with oligophrenia.

Book Notices

The Care of Chronic Disease in Pittsburgh and Allegheny County. A Survey. By Claude W. Munger, M.D., and Mary C. Jarrett. Under the Auspices of Federation of Social Agencies of Pittsburgh and Allegheny County Health Division. Loose-Leaf. Paper. Various pagination. Health Division, Federation of Social Agencies, 519 Smithfield St., Pittsburgh, 1947.

A comprehensive and detailed study of the needs of patients suffering from chronic diseases is embodied in the survey prepared for Pittsburgh and Allegheny County. In 1900 persons over 65 years of age constituted 4.1 per cent of the population of the United States, and, in 1940, 6.8 per cent; reliable estimates indicate that by 1960 they will comprise over 9 per cent of the population.

Other studies indicate that 10 per cent of the general population suffer from chronic disease, of whom 1 per cent are incapacitated invalids. Something of the magnitude of the problem is expressed in these figures, and the facilities for the care of such patients have been scant and inadequate. Too frequently it has been the tendency to approach the problem as though it were medically isolated, and patients are given the barest necessities to sustain life. Present sentence in a modern penal institution is frequently far less harsh than life in an institute for the chronically ill, where patients sit in long rows beside their beds or on hard benches in corridors or congregate in crowded basement flooded with the raucous noise from a radio loud speaker. Almost no attempt is made to provide diversional or recreational facilities, and patients of different social and ethnic background, of varied life experiences, are all herded together in the belief that similarity in years is synonymous with unanimity of purpose and outlook in life.

Dr. Munger and Miss Jarrett have offered some excellent suggestions to alleviate the plight of the chronically ill. Voluntary homes for the chronically ill should be expanded in numbers and their facilities increased by the addition of regular medical service given by competent physicians, satisfactory dietary facilities, the services of medical social workers and the development of suitable recreational programs. Many of the technics long used in hospitals for acutely ill patients should be translated for use in homes for the chronically ill. Nursing homes can become another valuable means of meeting the problem of the chronically ill. A system whereby there is a division of the chronically ill and those requiring hospital services and those requiring home services is essential in the provision of competent medical service. A plan whereby hospitals would be located on or near the campus of the medical schools would attract a better class of physicians and would allow the possibility of using these patients for teaching purposes by the medical school. Resident and undergraduate instruction could also be used if the medical college were asked to nominate the staff physicians.

Boarding as well as apartment houses could be adapted to the use of old age assistance pensioners and would also help meet some of the problems of the chronically ill.

The erection of satisfactory community homes for the chronically ill is of vital concern and requires careful planning by leaders of the medical and social fields. Arrangements by which patients are allowed to pay for their services in accordance with their available resources might well be incorporated in such a plan. Community planning on a large scale would not be as expensive a program as would appear at first sight, since through neglect there are serious loss of earning power, family disintegration and individual suffering not usually recognized. In terms of over-all community gain, it would be cheaper to plan, build and maintain satisfactory facilities for the chronically ill, and rehabilitate a sufficient number of them to make the plan remunerative to a certain degree.

The authors are to be commended on their courage in offering a sound, sensible plan for a seriously neglected phase of medical care. The book is recommended to all physicians and social workers, who must inevitably face the problems of the chronically ill and the aged. It is regretted that the book is mimeographed and that not all pages are easily readable. Another slight defect of the book is that the pagination is by chapters rather than continuous; also, the lack of an index makes an otherwise excellent book a little difficult as a reference book. In spite of these small blemishes it is an outstanding report on a serious current problem.

Disability Evaluation: Principles of Treatment of Compensable Injuries. By Earl D. McBride, B.S., M.D., F.A.C.S., Assistant Professor in Orthopedic Surgery, University of Oklahoma School of Medicine, Oklahoma City. Fourth edition. Fabrikoid. Price, $12. Pp. 667, with over 400 illustrations. J. B. Lippincott Co., E. Washington Sq. Philadelphia 5, 1948.

This book is made up of numerous detailed tables, accompanied and elaborated by informative reading matter regarding the injuries of industrial occupations. These injuries are discussed from various points of view: subjective and objective symptoms, physical signs, methods of examination, differential diagnoses, treatments and prognoses. But these all lead up to the discussions on the evaluation of disabilities resulting from injuries.

The tables and formulas, which are the core of the work, are extensive and are arranged to give practically foolproof answers—providing that the reader knows how to solve them. A large proportion of readers will find them difficult to use because they are complicated.

In the text as well as in the tables and formulas there is lack of clearness and simplicity of style. There is much valuable and dependable information throughout the book in regard to the workmen's compensation laws as they are enacted in the various states, and this without formidable legal phraseology. The sections on malingering, the tables showing the healing periods required for fractures, and the chapter on "The Industrial Back"—not an apt title—are among the best. An important omission from discussion is Sudek's atrophy (causalgia).

This volume is a somewhat sloppy job of bookmaking, as shown by the haphazard page numbering, obvious errors and inadequate index.

Factors Regulating Blood Pressure. Transactions of the First Conference, April 24-25, 1947, New York, N. Y. Edited by B. W. Zweifach and Ephraim Shorr. Loose-Leaf. Paper. Price, $1.90. Pp. 175, with 10 illustrations. Josiah Macy, Jr. Foundation, 565 Park Ave., New York 21, [n. d.].

This volume reports the transactions of the First Conference on Factors Regulating Blood Pressure, held under the auspices of the Josiah Macy Jr. Foundation in April 1947. The Macy Foundation and its director, Dr. Frank Fremont-Smith, have done much in recent years to advance biologic and medical science through the sponsoring of meetings of small, informal conference groups of laboratory and clinical investigators in several fields, including that of blood pressure. The first meeting of the conference (presided over by Dr. Harry Goldblatt) was concerned mainly with experimental and human hypertensions, but future meetings will include consideration of cardiovascular mechanisms in health and in diseases other than hypertension, as well as renal function and malfunction.

Inclusion of the thirteen formal presentations of the two day conference and the discussion following each renders this volume an excellent summary of the current views of leading American and Canadian investigators in the field of hypertension. The pathogenesis and treatment of experimental hypertensions were considered under the following headings: (*a*) the role of the nervous system in experimental renal hypertension; (*b*) the concept that experimental renal hypertension is due to renal incretory deficiency; (*c*) hepatorenal vasotropic factors in experimental renal hypertension; (*d*) salt choice by renal hypertensive animals; (*e*) methods of producing and studying experimental hypertensions; (*f*) renin tachyphylaxis and (*g*) the effect of renal extracts and antirenin in experimental renal hypertension. Human hypertension was discussed as follows: (*a*) humoral factors in renal blood flow, (*b*) treatment with low salt and low protein diets, and (*c*) treatment with renal extracts, tyrosinase and quinones.

The evidence reported at the conference suggests that the pathogenesis of a presently unknown percentage of cases of essential hypertension is on a renal basis and that the renal mechanism involved is not yet determined but may be an increased secretion of renin, an increased formation of pressor amines or a decreased secretion of a hypothetic renal hormone.

Para-aminohippurate clearance and extraction studies gave no support to the possibility that renal arteriovenous shunts are operative and important in the kidney of essential hypertension. Discouraging results with the treatment in essential hypertension by the rice diet and by sympathectomy, quinones and renal extracts were reported. Nevertheless, the conference demonstrated that slow but steady progress is being achieved in the study of hypertension. These transactions should be read by all investigators in the fields of experimental and clinical hypertensions and by those physicians who appreciate a moving account of sometimes brilliant and more often painstaking elucidation of the fundamental mechanisms of hypertension and cardiovascular and renal pathophysiology.

The Integrative Action of the Nervous System. By Sir Charles Sherrington, O.M. With a new foreword by the author and a bibliography of his writings. New 1947 edition. Cloth. Price, $6. Pp. 433, with 85 illustrations. Yale University Press, New Haven 7, Connecticut; Cambridge University Press, Bentley House, 200 Euston Rd., London, N. W. 1. [n. d.]

This reprinting of one of the outstanding classics of all physiologic literature is most welcome. This motiograph first appeared in 1906 as the expanded presentation of a series of lectures given at Yale University as the Mrs. Hepsa Ely Silliman Memorial Lectures in 1904. It was subsequently reprinted in 1911, 1914, 1916, 1918 and 1920. In the more than a quarter of a century which has elapsed since the last reprinting it has often been difficult to obtain. This has been unfortunate, for although it will soon be a half century since these lectures were given and longer since some of the experimental work on which they were based was performed, the book maintains a remarkable vitality for all modern students of the nervous system. No single person has had greater influence on the development of neurologic science and neurologic thought than has Sir Charles Sherrington. This book contains much of his original observations and the theses based thereon.

The Physiological Society (of Great Britain) is to be congratulated on having made this work again available. It is particularly fitting that it was issued as a gift volume in connection with the Seventeenth International Physiological Congress of 1947, which met in Oxford, England.

This volume contains, in addition to the original text, an editorial note by the noted English physiologist Dr. Samson Wright, who has been directly responsible for the issuance of this reprinting, and a new foreword by Sir Charles, as well as his *curriculum vitae*.

The Rotunda Hospital 1745-1945. By O'Donel T. D. Browne, M.B., M.A., M.A.O., King's Professor of Midwifery, Trinity College, Dublin. Cloth. Price, $11. Pp. 296, with 45 illustrations. Williams & Wilkins Co., Mount Royal & Guilford Aves., Baltimore 2, 1947.

The history of the Rotunda Hospital, covering a period of two hundred years, represents a panorama of the development of modern obstetrics. The hospital was founded on March 15, 1745 by Bartholomew Mosse as the Dublin Lying-in Hospital for Poor Women in George's Lane. Mosse's primary objectives for the hospital were to help the poor lying-in women of Ireland and to provide a teaching center in midwifery for doctors, midwives and nurses. These purposes were fulfilled admirably during its long lifetime.

The story of the Rotunda is unfolded in a series of chapters devoted to the work of each of the masters of the hospital. Many of them made important contributions to the hospital and to the development of obstetrics. These great masters helped to shape the course of the specialty. In a summary of the outstanding masters, Mosse, the founder, was a man of vision and dauntless energy who saw the fruition of a great idea. Ould, who followed Mosse, wrote a book in 1741. He made pertinent observations on labor in women with contracted pelves and on the third stage of labor. Clarke instituted measures for the ventilation of the wards of the hospital. He was the first to realize that there was danger of infection in placing two puerperal women in the same bed. These simple measures decreased the number of fatalities from puerperal sepsis. Labatt and Collins continued the interest in puerperal fever. During their régimes active measures were taken to clean and disinfect the wards by the use of lime washings and chlorine fumigation. Each ward was closed after the occupants were discharged, thoroughly cleansed and allowed to be idle for some days. Neither master had the vision of Holmes or Semmelweis, but they made progress in the prevention of the dread puerperal fever. The first comprehensive report of the hospital was published in 1835.

Following these masters there appeared to be a great void in the history of the hospital which lasted almost fifty years. Little progress was made. Then followed Macan, Smyly and Tweedy, who brought new life into the old institution. Their interest in eclampsia gained wide recognition.

Thus each master left his mark, small or great, on the history of a great institution. Surely obstetrics has come a long way since the establishment of this famous hospital two hundred years ago. This can be noted best in the graph at the end of the book showing the number of deliveries and the maternal mortality throughout the years.

The book will be fascinating reading for all those interested in the history of obstetrics.

The Medical Annual: A Year Book of Treatment and Practitioner's Index. Editors: Sir Henry Tidy, K.B.E., M.A., M.D., and A. Rendle Short, M.D., B.S., B.Sc., Contributors: T. Anwyl-Davies, M.D., F.R.C.P., and others. Sixty-Fifth Year, 1947. Fabrikoid. Price, $7. Pp. 464, with 126 illustrations. Williams & Wilkins Co., Mt. Royal & Guilford Aves., Baltimore 2; John Wright & Sons, Ltd., 42-44 Triangle West, Bristol 8, England; Simpkin Marshall, Ltd., London, 1947.

Here is another edition of the time-honored Medical Annual, a British publication representing a compilation of recent advances and new thoughts on disease. Subjects are discussed in brief, giving a summary of the present day concept of the disease or disorder together with pertinent articles in the medical literature. On the whole a thoughtful and comprehensive review is presented of current scientific medical practice.

On page 51 under the heading "Clinical Entities Frequently Missed" mention is made of retention with overflow, genitocrural, osteitis pubis, referred renal pain, differential diagnosis between renal colic and acute appendicitis and ectopic ureter; however, it is difficult to know just why these five heterogeneous subjects were classified under that heading.

A practitioner's index of the new pharmaceuticals, diets and medical-surgical appliances is a welcomed addition to the back of the book, as is a list of the recent books published during the year. The carefully compiled general index makes the book useful for ready reference on various medical subjects.

In view of the continued paper and labor shortages, the publishers are to be commended for the production of this well bound, easily readable volume with suitable illustrations and references that cover the recent developments in the medical fields.

Cold Spring Harbor Symposia on Quantitative Biology. Volume XII: Nucleic Acids and Nucleoproteins. Cloth. Price, $7. Pp. 279, with illustrations. Published by the Long Island Biological Association as part of the work of the Biological Laboratory, Cold Spring Harbor, Long Island, New York, 1947.

The present volume records the latest advance in the chemistry and biology of nucleoproteins made by laboratories in this country and abroad. The reviews are thorough, authoritative and of fundamental importance. They are of most value at present to workers in genetics, virology, bacteriology and the fields of protein metabolism. It is, however, possible to predict that the practice of medicine will be affected by further research in this field. Thorell, from Casperson's laboratory, has demonstrated changes in the nucleic acid content of the cytoplasm during the development and maturation of leukocytes and red blood cells. Maturity can now be expressed in chemical terms; which marks an advance in cell physiology. From the same laboratory, Hyden reports on protein and nucleic acid changes in nerve cells during stimulation and during the course of infection with virus. Pollister outlines some of the histochemical methods by which it is possible to gain quantitative insight into the nucleic acid and protein contents of histologic preparations. The foregoing are examples of the type of subject discussed in the twenty-five reviews comprising this volume.

The fields covered are, at present, on the periphery of medicine, but promise to invade it soon. For those active in research in the basic sciences the information contained in this volume of the Symposia is of the highest value.

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Queries and Minor Notes

THE ANSWERS HERE PUBLISHED HAVE BEEN PREPARED BY COMPETENT AUTHORITIES. THEY DO NOT, HOWEVER, REPRESENT THE OPINIONS OF ANY OFFICIAL BODIES UNLESS SPECIFICALLY STATED IN THE REPLY. ANONYMOUS COMMUNICATIONS AND QUERIES ON POSTAL CARDS WILL NOT BE NOTICED. EVERY LETTER MUST CONTAIN THE WRITER'S NAME AND ADDRESS, BUT THESE WILL BE OMITTED ON REQUEST.

RECURRENT PNEUMONIA

To the Editor:—**An otherwise healthy boy 6 years old has in the past had numerous attacks of pneumonia, usually between November and April. During the past winter he had two attacks of virus pneumonia and one of bacterial pneumonia with complete recovery. No basic etiologic factor for the recurrent pneumonia has been demonstrated. Would he be benefited by a change to an area where the "common cold" is not so prevalent? What are the most suitable areas in the United States?**

M.D., New York.

ANSWER.—There are persons who have repeated attacks of pneumonia over many years for which no cause can be found and for which little can be done prophylactically. Pneumonia is said to recur more often than any other infectious disase. The literature is reviewed in Heffron's book (Pneumonia, New York, The Commonwealth Fund, 1939, p. 533). In such instances it is always necessary to exhaust every diagnostic possibility, bearing in mind possible allergy and congenital or other defects which hinder normal pulmonary drainage. Bronchiectasis is unlikely in a child of 6 but must be kept in mind. If, as in the case mentioned, the attacks usually occur in cold weather, it is reasonable to assume that migration to a warm climate would be helpful (Reimann, H. A.: Viral Infections of the Respiratory Tract; Their Treatment and Prevention, J. A. M. A. **122**:487, 1946). There is no place in the world where under average circumstances "colds" and virus pneumonias do not occur occasionally (*Medicine* **26**:167 and 185). The common cold may not be quite so prevalent in the Southwestern states, but here the possibility of exposure to coccidioidomycosis exists. Although this is probably not a serious risk, even that could be avoided in the more humid Southern states.

DYSMENORRHEA

To the Editor:—**A patient suffers from severe dysmenorrhea. The patient is white, aged 33, having symptoms of circulatory collapse, blood pressure of 80 systolic and 40 diastolic, profuse sweating, nausea, vomiting and severe pain. These symptoms become progressively worse each month for three months; the cycle then repeats itself. The patient is a nullipara; a gynecologic examination did not reveal any abnormality. Her weight is 144 pounds (65.3 Kg.), pulse rate 80 and normal blood pressure 120 systolic and 80 diastolic. Hemoglobin was 95 per cent and basal metabolic rate minus 12. Evidence of neurasthenic symptoms or history is absent. The patient is being treated with analgesics during menstrual periods. Dysmenorrhea with circulatory collapse lasts from twenty-four to thirty-six hours. What assistance can you offer in this case?**

S. M. Abbey, M.D., Bronx, N. Y.

ANSWER.—The association of circulatory collapse with dysmenorrhea is most unusual. An attempt should be made to prevent the pain rather that treat it after it occurs. One of the simplest ways to try to prevent dysmenorrhea is by means of estrogens or androgens. The estrogens are simpler, less expensive and more often effective in preventing severe pain at the menses. The simplest form of estrogen therapy is a 1 mg. tablet of diethylstilbestrol by mouth every night for sixteen nights beginning on the third night of menstrual bleeding. If she cannot tolerate diethylstilbestrol, she should be given two injections of estradiol benzoate in oil (1.66 mg. per dose) intramuscularly a week apart during the first half of the menstrual cycle, as first recommended by Leo Wilson. The purpose of this therapy is to suppress ovulation, because it is almost certain that functional dysmenorrhea occurs only in ovulatory cycles in the presence of a functioning corpus luteum. Of course, this treatment will relieve the pain of only one menstrual cycle; hence this medication must be repeated each month. If this treatment is carried out for a number of successive months the menstrual cycles may be disturbed and the amount of bleeding may be increased. To obtain permanent relief, a pelvic sympathectomy should be done; this operation yields almost perfect results in women relieved by estrogen therapy. In this case as in nearly all cases of severe functional dysmenorrhea, there is a large psychic factor which must be taken into consideration. Psychotherapy is of great help.

ETHYL CHLORIDE ANESTHESIA

To the Editor:—**Is it safe to use an ethyl chloride spray on a mask, as an induction agent for open drop ether?**

Robert C. Tevlin, M.D., Moorefield, Ohio.

ANSWER.—The question is difficult to answer statistically. Safety is largely a factor of the knowledge, skill and experience of the administrator. Ethyl chloride is believed to have pharmacologic effects similar to those of chloroform. Hence it may affect the heart directly and cause primary cardiac failure. The boiling point is low and the vapor of ethyl chloride is less irritant than chloroform or ether. It can therefore volatilize rapidly and pass rapidly through the lungs to the blood and tissues. If intelligently used ethyl chloride is relatively safe. The following precautions are helpful. 1. The patient should have a competent heart and normal breathing with freely patent air passages. 2. Control of dosage is more accurate in drops than in a spray. (Drops from the usual container can be secured either by prechilling or by removing the glass tip.) 3. When breathing is deeply depressed or suddenly changes in character administration should be interrupted. 4. Changes in the character of the pulse and the color of the skin should be observed continuously and administration abandoned at the first evidence of circulatory embarrassment.

When nitrous oxide or other pleasant means of induction are available, few experienced anesthetists precede the administration of ether by ethyl chloride.

TATTOOING

To the Editor:—**An article in the February Catholic Digest by Mary Whiteford starts out with this paragraph: "Tattooing is no longer merely a device to bedizen the seagoing sailor. Its practical value has raised it to the status of a science. The Chicago tattooist, Tatts Thomas, who works with a group of doctors, says the greatest value of modern tattooing is its effectiveness in cases of slight disfigurement that are not important enough for plastic surgery. 'Lots of fellows come home from service with scars that make them self-conscious but they don't have the time or money eradication by surgery would require. I develop a pigment the same color as the patient's skin, and the scar can be made almost invisible by tattooing.'" Can you advise me whether or not there is any basis in fact in this article, whether or not Mr. Thomas is an ethical person to whom we might refer a patient? Can you inquire and find out whether he has had any experience in covering up vitiligo?**

M. A. Shillington, M.D., Glendive, Mont.

ANSWER.—Those engaged in plastic surgery occasionally use the method of tattoo to mask a flat scar or a portwine mark by inserting skin-colored pigments into them. The method has a limited usefulness, however, because the technic is somewhat complicated and the results are not always satisfactory. The results in vitiligo are even less satisfactory. Vitiligo is usually progressive, lesions enlarge and new ones develop. In the summertime when the surrounding normal skin becomes tanned, the patches of vitiligo are by contrast much more noticeable than in wintertime. For these reasons one would not expect tattoo to benefit vitiligo. Even "Tatts" Thomas was quick to say that the results were unsatisfactory in the few cases of vitiligo that he had "fooled with." His studio, incidentally, is located in an amusement "arcade" and is hardly the place for a physician to refer a patient. Mr. Thomas does not pretend to anything but a tattoo parlor for the "purpose of decoration."

PARALYSIS OF VOCAL CORD

To the Editor:—**A white boy, aged 17 years, experienced hoarseness about three months ago for the first time. About a week later he had symptoms of an infection of the upper respiratory tract which lasted about three weeks. The hoarseness persisted and became slightly worse. He consulted an ear, nose and throat specialist who stated that he had a paralysis of his left vocal cord. His past history is essentially negative with a history of routine immunizations against diphtheria. History of rheumatic fever or exposure to tuberculosis is absent. The physical examination including a careful neurologic examination revealed no abnormalities except laryngoscopic findings. A roentgenogram of the chest by a qualified radiologist indicates that there is a low grade accentuation of markings in the right second anterior interspace without soft infiltration. Routine blood count was as follows: white blood cells, 7,000; polymorphonuclear cells, 63 per cent; lymphocytes, 33; monocytes, 1, and eosinophils, 3.**

Harry Bootwright, M.D., Kingsport, Tenn.

ANSWER.—Instances of paralysis of the vocal cord and without discoverable cause for the condition make up nearly one half of all cases reported. If the cord is completely immobile the prognosis for recovery is poor; no more than 5 per cent regain function according to recent investigators.

As in the patient described it is the left cord which is most often involved. In unilateral involvement of the vocal cord of this type, the hoarseness generally improves with time due to compensatory activity on the part of the opposite healthy cord.

CLICKING SOUNDS IN EARS

To the Editor:—A patient, 29 years of age, received a relatively minor head injury approximately seven months ago in an automobile accident when his head struck the roof of the car. Loss of consciousness did not occur. Symptoms were limited to an episode of vertigo which lasted approximately one-half hour immediately after the accident. During the following week he experienced three or four episodes of severe headache centering around the vertex of the skull without nausea or vomiting. He did not have bleeding from the eyes, ears or nose. About two days after the accident, the patient noticed a persistent ticking of both ears. This ticking is distinctly audible to medical examiners from a distance of approximately 8 inches (20.3 cm.) from the patient. It is more distinct when the examiner's ear is placed against that of the patient. The ticking is not synchronous with the pulse or heart beat. It is about one and one-half times more rapid than the heart rate. The ears show no retraction of the tympanic membranes, no edema, no evidence of infection or any other pathologic change. The eustachian tubes are patent. Roentgenograms of the skull immediately following the accident and at later intervals reveal no evidence of fracture. How can you account for the objectively audible ticking and what is its treatment? Visible motion of the tympanic membranes is absent and the patient does not move his jaws or contract his jaw muscles to produce this ticking.

M.D., New York.

ANSWER.—Ticking or clicking sounds coming from the ear are frequently the result of spasmodic contraction of the muscles at the mouth of the eustachian tube or of the intratympanic muscles. Spasmodic contractions of the muscles are similar to the tic of muscles around the eye. Local therapy is ineffective.

Treatment should be directed toward eliminating any general nervous condition.

WHISKY ACIDOSIS

To the Editor:—This concerns persons who drink whisky with "club soda" and whisky with water. It is known that whisky has an acid reaction in the system and when taken with water this action is diluted but not changed as to acidity. On the other hand "club soda" has an alkaline reaction and neutralizes to a certain extent the acid reaction of whisky. Has anything appeared in medical literature indicating the advisability of using "club soda" with whisky when taken internally?

M.D., Ohio.

ANSWER.—"Club Soda" is a mildly alkaline water charged with carbon dioxide. The labels on the bottles indicate the presence of sodium citrate and sodium bicarbonate. The p_H of a sample of "club soda" was found to be 8 compared to 7 for tap water. The total solids were but 0.1 per cent. Even if all of the solids were in the form of sodium bicarbonate the amount of alkali consumed would probably be insufficient to combat the long delayed acidosis of the whisky hangover.

DECHOLESTEROLIZING AGENTS

To the Editor:—I have a patient with coronary thrombosis and a high blood cholesterol content of 482 mg. per hundred cubic centimeters. She has been on a rigid low cholesterol diet for the last six weeks without appreciable change in cholesterol content of the blood. Is there a lipolytic substance available at present to reduce blood cholesterol?

Allen M. Ross, Darien, Mass.

ANSWER.—Unfortunately the blood serum cholesterol does not respond to a low cholesterol diet in a predictable fashion. In some instances it is reduced; in others it remains unchanged. Recently Herrmann (*Am. Heart J.* **33**:711-712, 1947) reported using choline, methionine and inositol as decholesterolizing agents and obtained a moderate reduction in cholesterol in many cases. However, experience with these agents is still limited and more work will be necessary before their role is established.

RHEUMATIC FEVER

To the Editor:—A boy patient 8 years old has a subfebrile temperature every day, between 99 and 100 and sometimes reaching 100.4 F. His sedimentation rate was 25 and white blood cell count 10,300. A diagnosis of rheumatic fever was made, and I started treatment with salicylates and rest in bed. The temperature was affected little but the sedimentation rate came down to 14 and the white cells to 9,000. Signs of heart disease are absent. This treatment is not satisfactory because as soon as he stops receiving salicylates and gets up the temperature goes back to 100.4 and 100.6 F. What do you suggest?

Giacomo Orsillo, M.D., Elmira, N. Y.

ANSWER.—The administration of salicylates frequently reduces the sedimentation rate and the white cell count and may or may not decrease the body temperature. This effect is nonspecific and has no known influence on the underlying disease process, which, in this case, may be rheumatic fever. The administration of salicylates is believed to have value in the control of pain and discomfort rather than in antibiotic or direct therapeutic effect in rheumatic fever. It is typical for the sedimentation rate and the temperature to rise several days after the discontinuation of salicylates.

There is no known drug for the specific treatment of rheumatic fever. If the patient shows evidence of pharyngitis, tonsillitis or other infections, it is recommended that he receive a course of penicillin as a therapeutic trial for at least a week. It is recommended that 100,000 units be injected, intramuscularly, every four hours during this period. As long as the patient has tachycardia or fever he should be kept in bed. The sedimentation rate of 25 is considered significantly abnormal and may serve as a further guide to continuing the rest in bed.

PHARMACOLOGY OF GLYCOLS

To the Editor:—A recent article in *Hygeia* describes the solvent used in penicillin mist treatment of sinus infection. What solvent was used about ten years ago to make the elixir of sulfanilamide that caused a number of deaths? Has the pharmacology of propylene glycol, triethylene glycol and ethylene glycol been studied and reported and if so where? What is the toxicity of each? Is any of them safe for use in sinus treatment? Would the propylene glycol solution produce as good results in sinus treatment without the penicillin?

G. R. Wentzel, M.D., Sunbury, Pa.

ANSWER.—The solvent used in "elixir of sulfanilamide" was diethylene glycol. Since 1937 a large amount of work has been published concerning the pharmacology of the glycols. Among the more comprehensive papers are the following:

Hanzlik, P. J., and others: Toxicity, Fats and Excretion of Propylene Glycol and Some Other Glycols, *J. Pharmacol. & Exper. Therap.* **67**: 107, 1939.

Hanzlik, P. J.; Lehman, A. J.; Van Winkle, W., Jr., and Kennedy, N. K.: General Metabolic and Glycogenic Actions of Propylene Glycol and Some Other Glycols, *J. Pharmacol. & Exper. Therap.* **67**: 114, 1939.

Newman, H. W.; Van Winkle, W., Jr.; Kennedy, N. K., and Morton, M. C.: Comparative Effects of Propylene Glycol, Other Glycols and Alcohol on the Liver Directly, *J. Pharmacol. & Exper. Therap.* **68**: 194, 1940.

Van Winkle, W., Jr.: Quantitative Gastrointestinal Absorption and Renal Excretion of Propylene Glycol, *J. Pharmacol. & Exper. Therap.* **72**: 344, 1941.

Morris, H. J.; Nelson, A. A., and Calvery, H. O.: Observations on Chronic Toxicities of Propylene Glycol, Ethlene Glycol, Diethylene Glycol, Ethylene Glycol Mono-Ethyl Ether, and Diethylene Glycol-Mono-Ethyl Ether, *J. Pharmacol. & Exper. Therap.* **74**: 266, 1942.

Fitzhugh, O. G., and Nelson, A. A.: Comparison of Chronic Toxicity of Triethylene Glycol with That of Diethylene Glycol, *J. Ind. Hyg. & Toxicol.* **48**: 40, 1946.

Propylene glycol has about the same toxicity as glycerine. About two thirds of the administered glycol is excreted by the kidney and one third converted to lactic acid in the body and either burned or used to form glycogen. Triethylene glycol is somewhat more toxic than propylene glycol, but in the amounts used for air sterilization the margin of safety appears to be high.

Ethylene and diethylene glycols are highly toxic. Ethylene glycol is converted to oxalic acid in the body and direct damage to liver and kidney results from the action of this metabolite. Diethylene glycol is not metabolized but is directly toxic to the kidney and liver.

Regarding the use of the propylene glycol solution without penicillin, it is possible that some antibacterial effect would have been seen, since propylene glycol is known to have an antibacterial action. Whether the results would have been comparable to those of the penicillin-glycol mixture cannot be predicted.

ATROPINE IN MUMPS

To the Editor:—Is there contraindication to the use of atropine sulfate to control salivary secretion in epidemic parotitis fifteen minutes to one-half hour before mealtime so that the patient may partake of food without the usual associated pain?

D. G. Seaman, M.D., Mechanicsburg, Pa.

ANSWER.—Usually pain occasioned by eating during an attack of epidemic parotitis is not sufficiently severe to require medication. However, no serious objection exists to prescribing atropine sulfate if salivary secretions are excessive. It is often contended that atropine is not of value in the treatment of mumps.

MONGOLIAN IDIOCY

To the Editor:—In reply to the query concerning the distinction between mongolian idiocy and cretinism (The Journal, January 10, p. 146), you fail to mention the use of dermatoglyphics. According to the preliminary report on the work being done by Harold Cummins and R. V. Plato (Mongolism: an Objective Early Sign, *South. M. J.* **39**: 925-928 (Dec.) 1946), palmar dermatoglyphics has substantial value for objective recognition of mongolism. Their diagnosis was accurate in about 92 per cent of a group of 83 cases, including some normal controls. In view of this showing, the possibilities of this objective early sign should be more widely known and employed.

T. D. Stewart, M.D., Smithsonian Institution, Washington 25, D. C.